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Exploration of practice with non-invasive ventilation (NIV) to patients with chronic obstructive pulmonary disease (COPD) based on the patients perspectives on the treatment.

Christensen, Helle Marie; Huniche, Lotte; Titlestad, Ingrid Louise

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46th Nordic Lung Congress

REYKJAVÍK, ICELAND, JUNE 13–15, 2013

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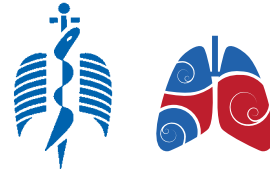
* Indikation: Tiotropium er en symptomlindrende bronkodilatator til vedligeholdelsesbehandling af kronisk obstruktiv lungesygdom (KOL).

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Welcome

*Veistu ef þú vin átt,
þann er þú vel trúir,
og vilt þú af honum gott geta,
geði skaltu við þann blanda
og gjöfum skipta,
fara að finna oft*

*Know, if you have a friend
in whom you have faith,
and you wish to get something good from him,
you must share with his mind
and exchange gifts,
and go often to seek him out*

(Hávamál)

Dear Participant

On behalf of the organizing Icelandic societies of pulmonary physicians and nurses, we are pleased to welcome you to Reykjavik and to the 46th Nordic Lung Congress.

A profound change has occurred in just a few years in the way we access information. To gain knowledge of the most recent advances in medicine it is no longer necessary to travel the world. In some aspects the need for medical conferences as a source of explicit information has lessened.

What has not lessened and has perhaps become more important than ever before, is the way we process this immense amount of information, digest it and turn it into the know-how that we can use for our own work and for the benefit of our patients.

This is the kind of tacit knowledge that can only be transmitted by personal contact with people that you know or share a background with, be it cultural, scientific or social.

Therein one finds the value of Nordic collaboration.

The ambition of the NLC is to facilitate this collaboration by bringing together Nordic academic and clinical researchers with shared interests in respiratory medicine and nursing. If fruitful, such contacts can be of crucial importance in the everyday work, also in the interval between the conferences. The general vision for Nordic collaboration is that the Nordic Countries comprise a leading region in the areas of innovation, green growth and welfare. Working together in health care, will help us along that path.

We are thankful to the session Chairs, and Plenary, Invited and Featured Speakers and to all of you who have come to Reykjavik to present and share your work.

The associated exhibition runs in parallel with the conference and offers you the chance to get up-to-date information from companies active in respiratory medicine. We are grateful to our sponsors and exhibitors for their interest and support for the conference

Special thanks go to the dedicated team of Congress Reykjavik who run all aspects of the technical organisation, marketing and exhibition of this conference.

We hope you find the conference stimulating and that you enjoy meeting up with old friends and making new ones. We look forward to receiving your feedback and to seeing you again at the next NLC in 2015.

Best wishes,

Eyþór Björnsson,

The Icelandic Society of Respiratory Physicians

Bryndís Halldórsdóttir,

The Icelandic Society of Respiratory Nurses

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Committees

Physicians Programme

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Practical Information

Chairs

Please be present in your session hall at least 10 minutes prior to your session. It is important that the session stay on schedule so that individuals who want to hear a specific talk may do so without concerns of time.

Please keep time with a gentle but firm hand.

It is vital that all speakers observe their time allotment.

Congress Badges

Your personal badge is your entrance ticket to the sessions and you are asked to wear it throughout the congress.

Should you misplace your badge a replacement can be obtained at the Congress hospitality desk.

Excursions

Excursions for participants and accompanying persons are available and information and tickets can be obtained at the Congress hospitality desk.

Hospitality and Registration Desk

Congress Reykjavík is in charge of the registration, accommodation bookings and social arrangements.

Opening hours: Thursday June 13 10:00–16:30

Friday June 14 08:00–16:30

Saturday June 15 08:00–12:00

Telephone / mobile: Kristjana 820 4339, Bryndis: 696 5169, Lara: 896 6075

Poster Display, set –up and removal

All posters are to be put up at the beginning of the Congress and dismantled in the end. Poster left on poster boards after the congress will be removed by the organiser who can not be held liable for any loss or damage to posters.

Please refer to the Programme book that you will receive upon arrival at the Congress for the poster board number assigned to you.

Please use the board with the same number.

Professional Congress Organizer – PCO

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Congress Reykjavík, Conference Management Services Ltd. is the official organizing agency for the congress.

The address is: Congress Reykjavík, Engjateigur 5, IS-105 Reykjavík,

tel: +354 585 3900, fax: +354 585 3901, www.congress.is.

Speakers

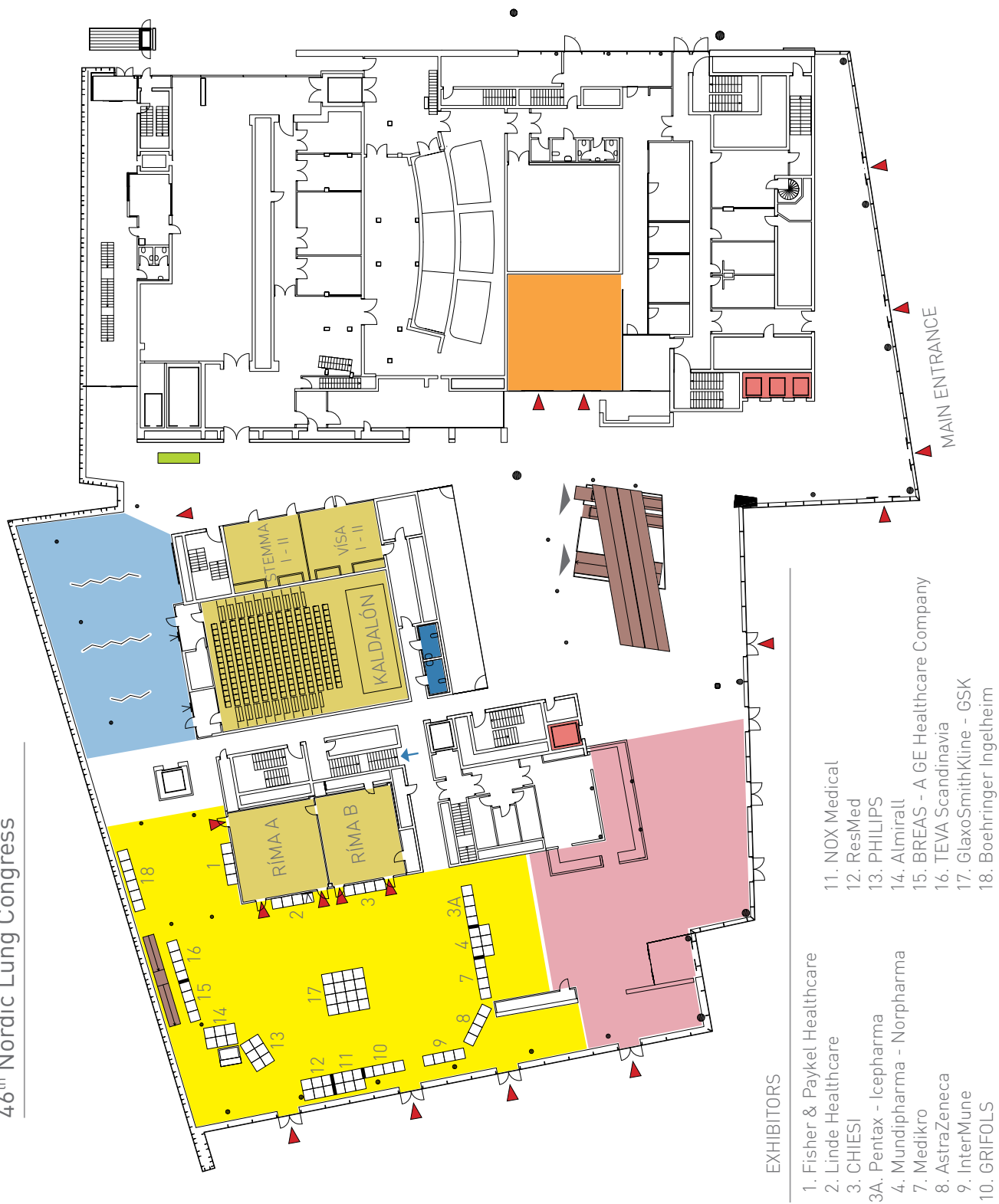
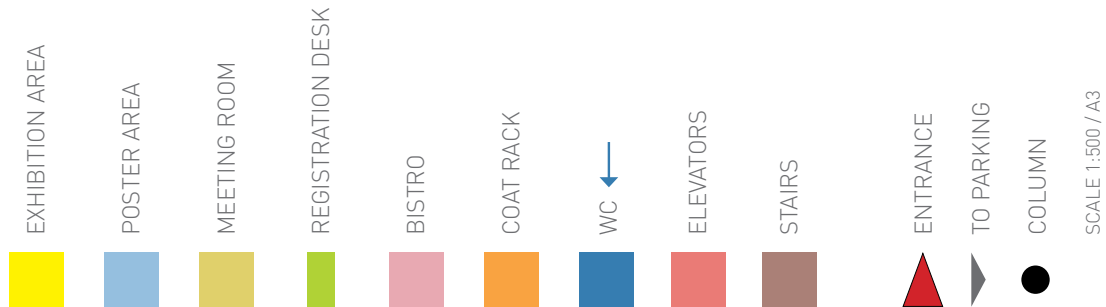
All speakers are asked to bring their presentation on a memory stick in time before the beginning of their session and load it on the computer in the session hall.



46th Nordic Lung Congress



1ST LEVEL



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Ráðlagður skammtur er einn 322 µg innöndunarskammtur af aklidíníumi tvisvar á sólarhring. Ef skammtur gleymist á að nota næsta skammt eins fljótt og hægt er. Hins vegar má sleppa skammti sem gleymdist sé næstum kominn tími á næsta skammt. Aldraðir: Ekki þarf að aðlaga skammta hjá öldruðum sjúklingum. Skert nýrnastarfsemi: Ekki þarf að aðlaga skammta hjá sjúklingum með skerta nýrnastarfsemi. Skert lifrastarfsemi: Ekki þarf að aðlaga skammta hjá sjúklingum með skerta lifrastarfsemi. Börn: Notkun Eklira Genuair á ekki við hjá börnum og unglingum (yngri en 18 ára) fyrir ábendinguna langvinna lungnateppu. Lyfjagjöf: Til innöndunar. **Frábendingar:**

Ofnæmi fyrir aklidíníumbromíði, atrópíni eða afleiðum þess, þar með talið ípratrópium, oxitrópium og tíotrópium eða einhverju hjálparefnanna. **Upplýsingar um aukaverkanir, milliverkanir, varnaðarorð og önnur mikilvæg atriði má nálgast í sérlyfjaskrá – www.serlyfjaskra.is. Markaðsleyfishafi: Almirall, S.A. Ronda General Mitre, 151, ES-08022 Barcelona, Spánn. Sími: +34 93 291 30 00. **Umboðsaðili á Íslandi:** Vistor hf., Hörgatúni 2, 210 Garðabær. Sími: 535-7000. Textinn var síðast samþykktur 22. febrúar 2013. **Verð og pakkningastærðir** (maí 2013): 60 skammtar (8.576 kr) / 180 skammtar (23.457 kr.). **Afgreiðslutilhögun:** R, Greiðsluþáttaka sjúkratrygginga: G.**

Social Programme

Thursday, June 13

17:00–18:30 **Welcome Reception – Reykjavik City Hall**

Welcome reception will be held at the City Hall.

- Light refreshment will be served and musical artists will perform during the reception.
- The City Hall is located in the city centre by the lake Tjörnin.
- Included in the registration fee.



Friday, June 14

20:00–23:30 **Congress Dinner at The Blue Lagoon**

The Blue Lagoon is a unique experience – an unforgettable opportunity to energize with the forces of nature. Set in the pure heart of the Icelandic landscape, Blue Lagoon is a truly special world.

- After optional bath a three course dinner with wine will be served at the Lava restaurant. Musical artists will perform during the dinner and a dance band will play for you into the summer night.
- Tickets can be bought when registering for the conference.

Transfer from the venue Harpa:

17:30 **Bus departure for Congress dinner with bath entrance**

Price ISK 17.500

19:00 **Bus departure for Congress dinner**

Price ISK 13.000

23:30/24:00 **Bus departure to Reykjavik**

Programme Overview

Thursday, June 13

	NORÐURLJÓŠ	KALDALÓN	RÍMA	STEMMA
12:00–12:20	Opening Act			
12:20–13:00	Light lunch in the exhibition area			
13:00–14:30		Session 1 – Sleep 1	Session 2 – Occupational Medicine	Session 3 – Palliative Care
14:30–15:00	Coffee Break			
15:00–16:00		Session 4 – Pulmonary interventions		
15:00–17:00			Session 5 – Pulmonary Rehabilitation	
15:00–16:30				Session 6 – RHINE study: New data
17:00–18:30	Reception City Hall – Musical Event			

Friday, June 14

	KALDALÓN	RÍMA	STEMMA	BJÖRTU LOFT
08:30–10:00	Session 7 – Diagnosis and staging of lung cancer	Session 8 – COPD 1 Aspects on disease progression	Session 9 – Home mechanical ventilation	
10:00–10:30	Coffee Break and Guided Poster Discussion			
10:30–12:00	Session 10 – Beginning COPD	Session 11 – Lung infections: Broken defences-vulnerable lungs		
12:00–13:00	Lunch			
13:00–14:45	Session 12 – Difficult to treat asthma; what do we know and where are we going?	Session 13 – Tuberculosis in the Nordic countries		
13:00–14:30			Session 14 – Partnership with individuals and families facing the existence of COPD	
14:30–15:00	Coffee Break and Guided Poster Discussion			
15:00–16:40	Session 15 – Biomarkers in asthma – diagnosis and management			
15:00–16:20		Session 16 – Person centered care		
15:00–16:30				Session 17 – Pulmonary Hypertension
20:00–23:30	Congress dinner at the Blue Lagoon			

Saturday, June 15

	KALDALÓN	RÍMA
08:30–09:30	Session 18 – Treatment guidelines on COPD	
08:30–09:45		Session 19 – Interstitial lung diseases
10:30–12:00	Session 20 – Nursing care for people with advanced lung diseases and their families	Session 21 – Sleep 2

Programme

Thursday, June 13

12:00–12:20	Opening Act	HALL: NORÐURLJÓŚ – 2 ND FLOOR
12:20–13:00	Light lunch served in the exhibition area	
13:00–14:30	Session 1 – Sleep 1 Aim: To describe the many faces of obstructive sleep apnea in association with other common clinical problems including RLS, nGER and insomnia Chair: Stefán Þorvaldsson	HALL: KALDALÓN
13:00–13:30	001 Is sleep apnea also a major health problem among women? Eva Lindberg <i>University of Uppsala, UPPSALA, Sweden</i>	
13:30–13:50	002 RLS among sleep apnea patients before and after PAP treatment and compared to the general population Erna Arnardóttir ¹ , Bryndis Benediktsdóttir ¹ , Christer Janson ² , Allan I. Pack ³ , Sigurdur Juliusson ⁴ , Thorarinn Gislason ¹ ¹ <i>University Hospital of Iceland, REYKJAVIK, Iceland</i> ² <i>Uppsala University, UPPSALA, Sweden</i> ³ <i>University of Pennsylvania School, PENNSYLVANIA, USA</i> ⁴ <i>Landsþítali University Hospital, REYKJAVIK, Iceland</i>	
13:50–14:10	003 Sleep and Gastroesophageal Reflux Disease Össur Ingi Emilsson ¹ , Christer Janson ² , Þórarinn Gislason ¹ ¹ <i>Landsþítali, REYKJAVIK, Iceland</i> ² <i>Uppsala University Hospital, UPPSALA, Sweden</i>	
14:10–14:30	004 Symptoms of insomnia among OSA patients before and after 2 years of PAP treatment Erla Björnsdóttir ¹ , Christer Janson ² , Jon Sigurdsson ¹ , Philip Gherman ³ , Michael Perlis ³ , Sigurdur Juliusson ⁴ , Erna Arnardóttir ¹ , Samuel Kuna ⁵ , Allan Pack ³ , Thorarinn Gislason ¹ , Bryndis Benediktsdóttir ¹ ¹ <i>University of Iceland, REYKJAVIK, Iceland</i> ² <i>Uppsala university, UPPSALA, Sweden</i> ³ <i>University of Pennsylvania, PENNSYLVANIA, United States of America</i> ⁴ <i>Landsþítali, REYKJAVIK, Iceland</i> ⁵ <i>Veterans Affairs Medical Center, Philadelphia, PHILADELPHIA, United States of America</i>	
13:00–14:30	Session 2 – Occupational Medicine Aim: To describe the effect of different environmental exposure of lungs Chair: Sigurður Þór Sigurðsson	HALL: RÍMA
13:00–13:30	005 Farming exposure and respiratory health Anna Rask-Andersen <i>Arbets- och miljömedicin, Akademiska sjukhuset, UPPSALA, Sweden</i>	
13:30–13:50	006 Asthma and COPD in Norwegian farmers – associations with farming exposure depend on atopy Wijnand Eduard <i>National Institute of Occupational Health, OSLO, Norge</i>	
13:50–14:10	007 The exposure-window and gene-environment interaction as modifier for respiratory health in farming Øyvind Omland <i>Aalborg University Hospital, AALBORG, Denmark</i>	
14:10–14:30	008 Volcanic eruptions and respiratory health – the Icelandic experience Hanne Krage Carlsen <i>University of Iceland, REYKJAVIK, Iceland</i>	

13:00–14:30	Session 3 – Palliative Care Aim: Create an interdisciplinary dialogue on unique needs of people with COPD in palliative care	HALL: STEMMA
	Chairs: Þorbjörg Sóley Ingadóttir, Guðrún Jónsdóttir	
13:00–13:30	O09 Palliative care and COPD Abebaw Yohannes <i>RIHSC Research Centre, MANCHESTER, United Kingdom</i>	
13:30–14:00	O10 Characteristics of people with COPD admitted to nursing homes in Iceland Ingibjörg Hjaltadóttir <i>Landspítali University Hospital, REYKJAVÍK, Iceland</i>	
14:00–14:30	Panel discussions; Abebaw Yohannes, Ingibjörg Hjaltadóttir, Jon Eyjolfur Jonsson and Dóra Lúðvíksdóttir	
14:30–15:00	Coffee Break	
15:00–16:00	Session 4 – Pulmonary interventions Aim: To provide insight into recent developments in pulmonary interventions	HALL: KALDALÓN
	Chair: Óskar Einarsson	
15:00–15:30	O11 State of the art : New frontiers in interventional pulmonology Erik van der Heijden <i>Radboud University Nijmegen Medical Center, NIJMEGEN, Nederland</i>	
15:30–16:00	O12 The use of prosthetics and biomedical engineering in modern pulmonology Tómas Guðbjartsson <i>University of Iceland, REYKJAVÍK, Iceland</i>	
15:00–17:00	Session 5 – Pulmonary Rehabilitation Aim: To review latest knowledge regarding outcome measures, early intervention and patient involvement in pulmonary rehabilitation	HALL: RÍMA
	Chairs: Magdalena Ásgeirsdóttir, Marta Guðjónsdóttir	
15:00–15:20	O13 Early pulmonary rehabilitation (PR) COPD Thomas Ringbæk <i>Hvidovre Hospital, HVIDOVRE, Denmark</i>	
15:20–15:40	O14 The pros of patient involvement in PR as experienced by patients Anne-Grethe Halding <i>Sogn og Fjordane University College, FØRDE, Norway</i>	
15:40–16:00	O15 The pros and cons of the different dyspnoea instruments as an outcome measure in pulmonary rehabilitation Elfa Dröfn Ingólfsdóttir <i>Reykjalundur, MOSFELLSBÆR, Iceland</i>	
16:00–16:20	O16 The pros and cons of different walk tests as outcome measure in pulmonary rehabilitation Ragnheiður Harpa Arnardóttir <i>University of Akureyri and Akureyri Hospital, AKUREYRI, Iceland</i>	
16:20–16:40	O17 The pros and cons of different activity monitors and self-rated activity scales Margareta Emtner <i>Uppsala University, UPPSALA, Sweden</i>	
16:40–17:00	Questions and discussions	
15:00–16:30	Session 6 – RHINE study: New data Aim: To present and discuss the latest epidemiological data from the RHINE study group	HALL: STEMMA
	Chair: María Gunnbjörnsdóttir	
15:00–15:20	O18 Changes in the prevalence of asthma, rhinitis and respiratory symptoms over a 20 year period Christer Janson <i>Uppsala University, UPPSALA, Sverige</i>	
15:20–15:40	O19 The importance of childhood environment for adult health in the Nordic countries Francisco Gomez Real <i>University of Bergen, BERGEN, Norway</i>	

15:40–16:00	020 Gender and respiratory health in Northern Europe Francisco Gomez Real <i>University of Bergen, BERGEN, Norway</i>
16:00–16:20	021 Respiratory health and co-morbidities: cardiovascular disease, diabetes and inflammatory bowel disease Vivi Schlünssen <i>University of Aarhus, ÅRHUS, Denmark</i>
16:20–16:30	Questions and discussions
17:00–18:30	Reception City Hall – Musical Event

Friday, June 14

08:30–10:00	Session 7 – Diagnosis and staging of lung cancer Aim: To highlight the importance of staging in the diagnosis and treatment of Lung Cancer and discuss advances in minimally invasive staging techniques and recent Nordic data on screening Chair: Steinn Jónsson	HALL: KALDALÓN
08:30–09:00	022 Recent Advances in the Staging of Lung Cancer: the 7th edition of TNM Peter Goldstraw <i>National Heart and Lung Institute, Imperial College, DARTMOUTH, United Kingdom</i>	
09:00–09:30	023 Endosonographic staging of lung cancer Erik van der Heijden <i>Radboud University Nijmegen Medical Center, NIJMEGEN, Nederland</i>	
09:30–10:00	024 CT screening of lung cancer – Danish screening study Asger Dirksen <i>Copenhagen University, COPENHAGEN, Denmark</i>	
08:30–10:00	Session 8 – COPD 1 Aspects on disease progression Aim: To illustrate the many facets of COPD Chair: Andrés Sigvaldason	HALL: RÍMA
08:30–09:00	025 Can we recognize the rapid decliners in COPD? Tarja Laitinen <i>University Hospital of Turku, TURKU, Finland</i>	
09:00–09:30	026 Why do COPD patients exacerbate? Per Bakke <i>University of Bergen and Haukeland University Hospital, BERGEN, Norway</i>	
09:30–10:00	027 What's new in COPD treatment? Christer Janson <i>Uppsala University, UPPSALA, Sverige</i>	
08:30–10:00	Session 9 – Home mechanical ventilation Aim: To give overview of interdisciplinary management of HMV Chairs: Sigríður Ólína Haraldsdóttir, Bryndís Halldórsdóttir	HALL: STEMMA
08:30–09:00	028 A life at home on a ventilator – reflections through the lens of caring science Berit Lindahl <i>Borås University College, BORÅS, Sverige</i>	
09:00–09:15	029 HMV at South West Hospital District in Finland Ulla Anttalainen <i>Turku University Hospital, TURKU, Finland</i>	

09:15–09:30	030 Management of airway secretions in home mechanical ventilation Tiina Andersen <i>Haukeland University Hospital, BERGEN, Norway</i>	
09:30–09:45	031 Choice of ventilator in LTMV (Long term mechanical ventilation) Ove Fondenæs <i>Haukeland University hospital, BERGEN, Norway</i>	
09:45–10:00	032 Morbid Obesity and Ventilation Eva Lindberg <i>Uppsala University, UPPSALA, Sweden</i>	
10:00–10:30	Guided Poster Discussion 1 – Poster P01–P32	
	Coffee Break	
10:30–12:00	Session 10 – Beginning COPD Aim: Draw attention to the situation and experience with beginning COPD	HALL: KALDALÓN
	Chairs: Jónína Sigurgeirsdóttir, Guðrún Jónsdóttir	
10:30–11:00	033 The challenge of experienced stigmatisation for self-infliction among persons living with COPD- can health care personnel make a difference? Anne-Grethe Halting <i>Sogn og Fjordane University College, FØRDE, Norway</i>	
11:00–11:20	034 The experience of families with beginning COPD <u>Guðrún Hlín Bragadóttir</u> ¹ , Helga Jónsdóttir ² , Þorbjörg Sóley Ingadóttir ² , Bryndís S. Halldórsdóttir ² ¹ Háskóli Íslands, KÓPAVOGUR, Iceland ² University of Iceland, REYKJAVÍK, Iceland	
11:20–11:40	035 Bodily (dis)integration; physical aspects and phenomenal experience of smoking <u>Marianne Klinke</u> , Helga Jónsdóttir <i>University of Iceland, REYKJAVÍK, Iceland</i>	
11:40–12:00	036 The relationship between stress management/relaxation exercises and anxiety, depression, health related quality of life and smoking <u>Kristín Rósa Ármannsdóttir</u> , Helga Jónsdóttir <i>University of Iceland, REYKJAVÍK, Iceland</i>	
10:30–12:00	Session 11 – Lung infections: Broken defences-vulnerable lungs Aim: To improve insight into the different clinical aspects of poor lung defence	HALL: RÍMA
	Chair: Ólafur Baldursson	
10:30–10:50	037 Ventilator Induced Lung Injury – Mechanical strain and cellular endurance Sigurbjörgur Káráson <i>Landspítali University Hospital, REYKJAVÍK, Iceland</i>	
10:50–11:10	038 Lung infections in the immunocompromized host Paula Masilyta <i>University of Helsinki, HELSINKI, Finland</i>	
11:10–11:30	039 Pneumonia due to influenza; is there a genetic susceptibility? Magnús Gottfreðsson <i>Landspítali University Hospital, REYKJAVÍK, Iceland</i>	
11:30–11:50	040 Bronchiectasis and Cystic Fibrosis; pathogens and the airway epithelium Ólafur Baldursson <i>Landspítali University Hospital, REYKJAVÍK, Iceland</i>	
11:50–12:00	Questions and discussions	
12:00–13:00	Lunch	

13:00–14:45	Session 12 – Difficult to treat asthma; what do we know and where are we going? Aim: To give a review of the current situation regarding the subject, with main focus on practical issues of value for the common chest physician	HALL: KALDALÓN
	Chairs: Friðrik Yngvason, Vibeke Backer	
13:00–13:05	Welcome / Introduction	
13:05–13:30	O41 Introduction with definition, prevalence numbers, characteristics and different phenotypes. What are the issues we are dealing with? Anneke ten Brinke <i>Medical Centre Leeuwarden, MOLENEND, Nederland</i>	
13:30–13:55	O42 Evaluation of the difficult to treat patient in the clinic and treatment adherence Leif Bjerner <i>Skåne University Hospital, LUND, Sweden</i>	
13:55–14:20	O43 Allergic and nonallergic factors in difficult to treat asthma Paula Kauppi <i>Helsinki University Central Hospital, HELSINKI, Finland</i>	
14:20–14:45	O44 Allergic and nonallergic factors in difficult to treat asthma with focus on allergens, work exposure, air pollution and comorbidities Paula Kauppi <i>HUCH, Skin and Allergy Hospital, Finland</i>	
13:00–14:45	Session 13 – Tuberculosis in the Nordic countries Aim: To highlight the importance of history, public health, migration and drug resistance in the fight against tuberculosis	HALL: RÍMA
	Chairs: Haraldur Briem, Tuula Vasankari	
13:00–13:30	O45 Our battle against tuberculosis in the mirror of time Gunnar Boman <i>Uppsala lungmedicin, UPPSALA, Sverige</i>	
13:30–13:45	O46 Experience of program management of tuberculosis in Finland Rauni Ruohonen <i>Filha, HELSINKI, Finland</i>	
13:45–14:00	O47 Tuberculosis among resident immigrants in Iceland Thorsteinn Blöndal, L. Gudmundsson, K. Blöndal <i>REYKJAVÍK, Iceland</i>	
14:00–14:15	O48 Tuberculosis and Migration Einar Heldal <i>OSLO, Norway</i>	
14:15–14:30	O49 Emergence of MDR-TB in Europe Christoff Lange <i>Germany</i>	
14:30–14:45	O50 Novel Anti-TB Drugs: Experience of Estonia Manfred Danilovits <i>Tartu University Hospital, TARTU, Estonia</i>	
13:00–14:30	Session 14 – Partnership with individuals and families facing the existence of COPD Aim: Facilitate development of health care for people with beginning COPD and their families	HALL: STEMMA
	Chair: Helga Jónsdóttir	
13:00–13:30	O51 Partnership with individuals and families facing the existence of COPD Helga Jónsdóttir ¹ , Alda Gunnarsdóttir ² , Bryndís S. Halldórsdóttir ² , Gunnar Guðmundsson ³ , Ingibjörg K. Stefánsdóttir ² , Jón Steinar Jónsson ⁴ , Rósa Jónsdóttir ² , Þorbjörg Sóley Ingadóttir ² ¹ Faculty of Nursing University of Iceland, REYKJAVÍK, Iceland ² Landspítali Reykjavík, REYKJAVÍK, Iceland ³ Lungnadeild Landspítala, Læknadeild Háskóla Íslands, REYKJAVÍK, Iceland ⁴ Heilsugæsla höfuðborgarsvæðisins, Læknadeild Háskóla Íslands, REYKJAVÍK, Iceland	

13:30–14:30	Panel discussions Þorbjörg Sóley Ingadóttir, Ingibjörg K. Stefánsdóttir, Jón Steinar Jónsson and Ann-Grethe Halding	
14:30–15:00	Guided Poster Discussion 2 – Posters P33–P62	
	Coffee Break	
15:00–16:40	Session 15 – Biomarkers in asthma – diagnosis and management Aim: To provide new insights in the use of biomarkers to detect airway inflammation and its role in asthma diagnosis and treatment. Future perspectives for new biomarkers	HALL: KALDALÓN
	Chairs: Dóra Lúðvíksdóttir, Leif Björner	
15:00–15:05	Welcome / Introduction	
15:05–15:25	O52 Clinical significance of different phenotypes in asthma Vibeke Backer <i>Bispebjerg University Hospital, COPENHAGEN, Denmark</i>	
15:25–15:45	O53 Clinical use of biomarkers in asthma management? Andrei Malinovchi <i>Uppsala University, UPPSALA, Sweden</i>	
15:45–16:05	O54 Airway hyperresponsiveness in asthma Maria Juusela <i>HUSMedical Imaging Center, HELSINKI, Finland</i>	
16:05–16:25	O55 Novel Therapies in Asthma – The Biomarker Era? Andrew Menzies-Gow <i>Royal Brompton Hospital, LONDON, United Kingdom</i>	
16:25–16:40	Questions and discussions	
15:00–16:20	Session 16 – Person centered care Aim: Facilitate implementation of person-centered perspectives in respiratory care	HALL: RÍMA
	Chairs: Ragnheiður Alfreðsdóttir, Jónína Sigurgeirsdóttir	
15:00–15:20	O56 Written Self Management Plan: a useful tool for asthma and COPD patients experiencing exacerbation at home? <u>Liv Hasund Eid</u> , Helga Groa Sigurdardóttir, Lena Kristin Jørgensen, Kari Hvinden <i>Glittreklinikken, HAKADAL, Norway</i>	
15:20–15:40	O57 Patient participation during hospitalization: Contributions and hindrances Bente Bjørslund <i>Hedmark University College, ELVERUM, Norge</i>	
15:40–16:00	O58 Exercise training – nothing for me. An interview study in patients with chronic obstructive pulmonary disease <u>Karin Wadell</u> , Petronella Nordwall Strömberg, Annacrine Fjellman-Wiklund <i>Umeå University, UMEÅ, Sweden</i>	
16:00–16:20	O59 The need of support to patients with lung cancer and their relatives <u>Maria Olin</u> ¹ , Cecilia Arving ² ¹ Karolinska Institutet, Dept Medicine Solna, STOCKHOLM, Sweden ² Uppsala University, Department of Public Health and Caring Sciences, UPPSALA, Sverige	
15:00–16:30	Session 17 – Pulmonary Hypertension Aim: Understanding pulmonary arterial hypertension with special emphasis on Chronic thromboembolic pulmonary hypertension – CTEPH	HALL: BJÖRTU LOFT – 6 TH FLOOR
	Chairs: Hrönn Harðardóttir Guðmundur Þorgeirsson	
15:00–15:30	O60 Pulmonary Hypertension – Causes and Diagnosis Göran Rådegran <i>Skånes Universitetssjukhus, LUND, Sweden</i>	
15:30–16:00	O61 CTEPH, revealing a hidden disease – epidemiology in Sweden Stefan Söderberg <i>Umeå University Hospital, UMEÅ, Sweden</i>	

16:00–16:30	O62 Treatment of CTEPH. Is surgery the solution? Søren Mellemkjær <i>Aarhus University Hospital, AARHUS, Denmark</i>
17:30	Bus departure for Congress Dinner with bath entrance
19:00	Bus departure for Congress Dinner
20:00–23:30	Congress dinner at the Blue Lagoon

Saturday, June 15

08:30–09:30	Session 18 – Treatment guidelines on COPD Aim: To provide an update on current international treatment guidelines	HALL: KALDALÓN
	Chair: Magni Jónsson	
08:30–09:00	O63 Updated GOLD guidelines – Pro Jørgen Vestbo <i>Odense University Hospital, ODENSE, Denmark</i>	
09:00–09:30	O64 A case against GOLD Peter Lange <i>University of Copenhagen and Respiratory Section, Hvidovre Hospital, COPENHAGEN, Denmark</i>	
09:30–10:00	Questions and discussions	
08:30–09:45	Session 19 – Interstitial lung diseases Aim: To get new knowledge about idiopathic interstitial pneumonias. Learn about new pathogenetic mechanisms in idiopathic pulmonary fibrosis. Obtain information on registries for interstitial lung diseases in the Nordic countries	HALL: RÍMA
	Chairs: Gunnar Guðmundsson, Elisabeth Bendstrup	
08:30–09:00	O65 State of the art 30–40 min Gisli Jenkins <i>University of Nottingham, NOTTINGHAM, United Kingdom</i>	
09:00–09:15	O66 Human bronchial basal epithelial cells as candidate EMT precursors in idiopathic pulmonary fibrosis Þórarinn Guðjónsson <i>University of Iceland, REYKJAVIK, Iceland</i>	
09:15–09:30	O67 The Danish Registry for Interstitial Lung Diseases, purpose and perspectives Charlotte Hylgaard <i>Aarhus University Hospital, AARHUS C, Denmark</i>	
09:30–09:45	O68 A national collaborative effort for the registration of idiopathic pulmonary fibrosis patient data in Finland Marjukka Myllärniemi <i>University of Helsinki, HELSINKI, Finland</i>	
10:00–10:30	Coffee Break	
10:30–12:00	Session 20 – Nursing care for people with advanced lung diseases and their families Aim: Enhance healthcare for people with advanced lung diseases and their families	HALL: KALDALÓN
	Chairs: Guðbjörg Pétursdóttir, Elfa D. Ingólfssdóttir	
10:30–10:45	O69 Caring burden of home-dwellers with partners suffering from COPD or dementia in relation to aspects of social support Bente Nordtug <i>Høgskolen i Nord-Trøndelag, LEVANGER, Norge</i>	

10:45–11:00	070 The effects of real-time telemedicine consultations between hospital-based nurses and severe COPD patients discharged after exacerbation admissions <u>Anne Dichmann Sorknæs</u> ¹ , Jest Peder ¹ , Mickael Bech ² , Lise Hounsgaard ² , Finn Olesen ³ , Birte Østergaard ² ¹ OUH-Odense University Hospital & Svendborg Hospital, V. SKERNINGE, Danmark ² University of Southern Denmark, ODENSE, Denmark ³ Aarhus University, AARHUS, Denmark	
11:00–11:15	071 Chronic Obstructive Pulmonary Disease – test of physical activity level in a home setting <u>Christina Nielsen</u> , Lisbeth Marie Oestergaard, Nina Skavlan Godtfredsen Bispebjerg University Hospital, COPENHAGEN, Denmark	
11:15–12:00	072 Family nursing practice for patients with lung diseases: Theoretical framework of partnership-based family nursing practice Helga Jónsdóttir, University of Iceland Addressing the diversity of patient needs in partnership-based family nursing practice Þorbjörg Sóley Ingadóttir, Landspítali University Hospital, Iceland Working with families in partnership-based family nursing practice Bryndís S. Halldórsdóttir, Landspítali University Hospital, Iceland	
10:30–12:00	Session 21 – Sleep 2 Aim: To describe new technical possibilities on how to assess and follow a very fast increasing patient population	HALL: RÍMA
	Chair: Þórarinn Gíslason	
10:30–11:10	073 New technological approaches to a major public health problem Samuel Kuna University of Pennsylvania, PHILADELPHIA, USA	
11:10–11:35	074 Telemonitoring of CPAP therapy Tarja Saaresranta Turku University Hospital, TURKU, Finland	
11:35–12:00	075 Presentation of the first Norwegian Hospital based Centre of Sleep Medicine Trygve Muller Jonassen University of Bergen, BERGEN, Norway	

Abstracts

Oral Presentations

Poster Presentations

Session 1 – Sleep 1

ORAL

001

Is sleep apnea also a major health problem among women?

Eva Lindberg

Uppsala University, UPPSALA, Sweden

In the literature, it is still often stated that obstructive sleep apnea is a male disorder and hence a majority of studies within this field has been performed in male populations. We have recently reported that in a population-based Swedish female sample investigated with full polysomnography, not less than 50% of women aged 20–70 years have an AHI of >5 and 5.9 % have severe sleep apnea defined as an AHI of >30 . The prevalence of sleep apnea was strongly associated with both age and BMI. These findings raise the question whether sleep apnea has an impact on health or if it is merely a marker of an ageing process and obesity in women. However, in the same population, there was an association between AHI and insulin resistance, metabolic syndrome, inflammatory markers and Type B Natriuretic peptide levels.

Conclusion: Sleep apnea is a common finding in women that do have an impact on well-known cardiovascular risk factors.

002

RLS among sleep apnea patients before and after PAP treatment and compared to the general population

Erna Arnardottir¹, Bryndis Benediktsdottir¹, Christer Janson², Allan I. Pack³, Sigurdur Juliusson⁴, Thorarinn Gislason¹

¹University of Iceland, REYKJAVIK, Iceland

²Uppsala University, UPPSALA, Sweden

³University of Pennsylvania School, PENNSYLVANIA, USA

⁴Landspítali University Hospital, REYKJAVIK, Iceland

Objectives: To compare the prevalence of reported restless legs syndrome (RLS) between subjects with obstructive sleep apnea (OSA) and a randomly chosen sample from the general population as well as possible changes with CPAP treatment.

Materials and Methods: The OSA subjects ($n = 822$) were a part of the Icelandic Sleep Apnea Cohort. They were newly diagnosed with moderate or severe OSA (665 males, 157 females). The control subjects ($n = 742$) were randomly chosen Icelanders (394 males, 348 females) who participated in another epidemiological study (www.boldcopd.org). Measurements included a standardized RLS rating scale, questions about sleep and the Epworth Sleepiness scale. The change with CPAP treatment was assessed after 2 years ($n = 538$).

Results: Among OSA males 23.3% reported RLS but 12.9% of control males ($p < 0.001$). 35.8% of OSA females reported RLS but 24.4% of control females ($p = 0.03$). Both among OSA patients and controls those with RLS more commonly reported insomnia, daytime sleepiness, nocturnal sweating, snoring and

gastro esophageal reflux ($p < 0.05$). They were more likely to be females and to have a smoking history. No relationship was found between RLS and age, BMI, hypertension or respiratory disease in a logistic regression adjusting for the presence of OSA and the other factors mentioned. No relationship was found between RLS and sleep apnea severity. Subjects using CPAP had a decreased prevalence of RLS from 25.7% to 13.8% while no change was observed in those subjects not using CPAP ($p = 0.04$ for difference between groups). Subjects that had persistent RLS were older on average and had a lower physical quality of life at baseline.

Conclusions: RLS is more prevalent among OSA patients than controls. No relationship was found with sleep apnea severity or BMI. CPAP treatment of OSA decreases RLS symptoms significantly. RLS symptoms are significantly related with insomnia and daytime sleepiness in both OSA subjects and controls.

003

Sleep and Gastroesophageal Reflux Disease

Össur Ingi Emilsson¹, Christer Janson², Þórarinn Gislason¹

¹Landspítali, REYKJAVIK, Iceland

²Uppsala University Hospital, UPPSALA, Sweden

Gastroesophageal reflux (GER) is a common condition, which affects around 12% of the adult population on a weekly basis. It is associated with various sleep disturbances, and can even cause nocturnal awakenings, sometimes leading to daytime sleepiness. Its association with obstructive sleep apnea (OSA) has become of special interest. Even though GER and OSA share common risk factors, such as obesity, their association seems to remain significant after adjusting for these factors. This is especially evident in patients suffering from nocturnal GER (nGER), which is considered more harmful than daytime GER only.

Patients with persistent nGER have been shown to be more likely to develop symptoms of OSA than those without nGER. The incidence of observed apneas is notably significantly higher among those with persistent nGER. Edema in the upper airway caused by nGER has been hypothesized to make the upper airway more susceptible to intermittent collapse during sleep, i.e. apneas, but this remains to be studied further. Conversely, studies have shown that treating OSA with CPAP can greatly reduce symptoms of GER. Therefore, it is also hypothesized that OSA can induce GER.

Most likely, OSA and GER can aggravate each other, almost as in a vicious cycle. In turn, these two conditions can cause or aggravate other respiratory illnesses, such as asthma and chronic cough.

Symptoms of insomnia among OSA patients before and after 2 years of PAP treatment

Erla Björnsdóttir¹, Christer Janson², Jon Sigurdsson¹, Philip Gherman³, Michael Perlis³, Sigurdur Juliusson⁴, Erna Arnardóttir¹, Samuel Kuna⁵, Allan Pack³, Thorarinn Gislason¹, Bryndis Benediktsdóttir¹

¹University of Iceland, REYKJAVIK, Iceland

²Uppsala university, UPPSALA, Sweden

³University of Pennsylvania, PENNSYLVANIA, United States of America

⁴Landspítali, REYKJAVIK, Iceland

⁵Veterans Affairs Medical Center, Philadelphia, PHILADELPHIA, United States of America

Study objectives: To assess the changes of insomnia symptoms among patients with obstructive sleep apnea (OSA) from starting treatment with positive airway pressure (PAP) to a two-year follow-up.

Design: Longitudinal cohort study.

Setting: Landspítali – The National University Hospital of Iceland.

Participants: 705 adults with OSA were assessed prior to and two years after starting PAP treatment.

Intervention: PAP treatment for OSA.

Measurements and results: All subjects underwent a medical examination, type 3 sleep study and answered questionnaires on health and sleep before and 2 years after starting PAP treatment. The change in prevalence of insomnia symptoms by subtype were assessed by questionnaire and compared between individuals who were using or not using PAP at follow-up. Symptoms of middle insomnia were most common at baseline and improved significantly among subjects using PAP (from 59.4% to 30.7%, $p < 0.001$). Symptoms of initial insomnia tended to persist, regardless of PAP treatment and symptoms of late insomnia were more likely to improve among subjects not using PAP. Subjects with symptoms of initial and late insomnia at baseline were less likely to adhere with PAP (odds ratio (OR) 0.56, $p = 0.007$, and OR 0.53, $p < 0.001$, respectively).

Conclusion: PAP treatment significantly reduced symptoms of middle insomnia. Symptoms of initial and late insomnia, however, tended to persist regardless of PAP treatment and had a negative effect on adherence. Targeted treatment for insomnia may be beneficial for patients with OSA comorbid with insomnia and has the potential to positively affect adherence to PAP.

Session 2 – Occupational Medicine

005

Farming exposure and respiratory health

Anna Rask-Andersen

Arbets- och miljömedicin, Akademiska sjukhuset, UPPSALA, Sweden

Exposure to fresh countryside air, physical work and lower rates of cigarette smoking have been thought to be the source of good health in farmers. But, respiratory health effects are well-recognized problems caused by agricultural exposures with dust and irritant chemicals. Numerous studies have shown that a spectrum of different symptoms and diseases sometimes overlapping each other may affect farmers such as inhalation fever, allergic alveolitis, chronic bronchitis, COPD and toxic injuries such as silo filler's disease. But the studies have been done on males; farm women have been underrepresented in most studies. However, a few studies of farm women have been carried out in the Nordic countries showing that females may be more sensitive to the effects of farm dust than men. While adult exposures on the farm are a known cause of occupational asthma, exposures to farm environments in early life reduce the incidence of asthma – an apparent contradiction that has been referred to as the "agricultural asthma paradox".

006

Asthma and COPD in Norwegian farmers – associations with farming exposure depend on atopy

Wijnand Eduard

National Institute of Occupational Health, OSLO, Norge

In a cross-sectional study of 8482 Norwegian farmers with and without livestock we assessed respiratory disease, lung function and atopy, and its associations with exposure to chemical and biological agents.

Methods: Asthma (current doctor diagnosed) and chronic bronchitis was recorded by a questionnaire and lung function by spirometry. COPD was defined by the 5% LLN prebronchodilator FEV1/FVC excluding asthma. Atopy was assessed in a sub-sample ($n=2253$) by a multiple RAST tests with common aeroallergens. Personal exposures to 13 chemical and biological agents were measured during predefined work tasks on 127 randomly selected farms.

Results: The prevalence of asthma was 2.7%, chronic bronchitis 6.9%, COPD 13.5% and atopy 14%. Compared to crop farmers, livestock farmers were more likely to have chronic bronchitis (OR 1.9, 95%CI 1.4-2.6) and COPD (OR 1.4, 95%CI 1.1-1.7). Asthma and atopy were not significantly elevated. In atopic farmers livestock production was associated with less asthma, higher COPD while chronic bronchitis was not significantly increased. In non-atopic farmers asthma and chronic bronchitis occurrence was significantly higher in livestock farmers, but not COPD.

Associations with estimated exposure showed similar associations with several of the agents. However, correlations between exposures prevented the identification of agents most strongly associated with respiratory disease.

Conclusions: Atopy seems to modulate the exposure-response associations of asthma and COPD in farmers differently. Atopic livestock farmers appear to have less asthma but more COPD than crop farmers, while non-atopic livestock farmers had more asthma, but not significantly more COPD. Associations with chronic bronchitis were independent from atopy although not significant in atopic farmers. Exposure to chemical and biological agents are likely causes of respiratory disease in farmers, but identification of specific agents was not possible.

007

The exposure-window and gene-environment interaction as modifier for respiratory health in farming

Øyvind Omland

Aalborg University Hospital, AALBORG, Denmark

Many factors, including environmental exposures, have been related to the observed increase in the prevalence of asthma during the last two or three decades. Working as a farmer is a complex and diverse way of living involving several exposures in mingled composition.

Published studies during the last decade or more have suggested that exposure to farming environment during the first years of life reduces the risk atopy, rhinitis, atopic asthma rather than increase the risk as seen when exposed later in life where organic dust exposure has been associated with increased risk. Presented data suggests that the toll-like receptor 2 gene is central in the protective effect in a gene-environmental interaction fashion, and findings indicates that other exposure than endotoxin and glucans might be involved.

The presentation will try to describe central findings in recent and relevant studies in the field of farming exposure and atopy and respiratory disease.

008

Volcanic eruptions and respiratory health – the Icelandic experience

Hanne Krage Carlsen

University of Iceland, REYKJAVIK, Iceland

The volcano Eyjafjallajökull erupted spring 2010 for the first time in nearly 200 years, producing a very fine-grained ash. As the eruption was long-almost 6 weeks, and near populated areas – concerns were raised about possible health effects of the ash.

The first study of the health of the residents near the volcano was undertaken as the eruption was ending, under the control of the Chief Epidemiologist as a public health safety measure. The aim of the study was to investigate if the volcanic ash was a

danger to human health, 200 individuals of all ages were studied using spirometry, a physician's exam and questionnaires.

The second study was planned from the University of Iceland and used questionnaires to assess the health of a larger proportion of the population in South Iceland. A demographically matched reference group was found in North Iceland. The results from the two studies will be presented at the conference, as well as other research into health effect from volcanic exposures in Iceland.

Session 3 – Palliative Care

009

Palliative care and COPD

Abebaw Yohannes

RIHSC Research Centre, MANCHESTER, United Kingdom

Chronic obstructive pulmonary disease (COPD) is major cause morbidity in old age. The majority of COPD patients are most likely to develop two or more co-morbidities that may contribute to substantial burden of symptoms such as intolerable dyspnoea, fatigue, depression, anxiety and poor health status. However, evidence from the available literature suggests that advanced COPD patients are less likely to receive palliative care and/or supportive care compared to cancer patients. Factors that contribute to this disparity are multi-factorial including diagnostic uncertainty when to provide palliative care, patients' unwillingness to discuss advanced care planning with their general practitioners, lack of appropriate guidelines when to refer patients to palliative care and lack of adequate resources. A few un-blinded studies of palliative care provision that included advanced COPD patients with other life threatening diseases showed some benefits in reducing healthcare utilization, improving quality of life and greater patients and caregivers' satisfaction with the service. Early identification and referral to palliative care of those COPD patients with a documented progressive decline in lung function and health status should be part of routine clinical practice. A well-integrated, comprehensive and collaborative approach to address the complex needs of patients (physical, psychological and spiritual) with moderate-to-severe COPD are worthy of consideration. Adequate resources are needed from the health care providers to improve end-of-life care and advance care planning for patients with COPD. Better symptom controls for dyspnoea and pain management for the end-stage of COPD are paramount to reduce caregivers' burden and improve quality of life patients with COPD.

O10

Characteristics of people with COPD admitted to nursing homes in Iceland

Ingibjörg Hjaltadóttir

Landspítali University Hospital, REYKJAVÍK, Iceland

In Europe, as in the rest of the world, the number of old people is rising, especially those who are 80 years and older. They are also more likely to be chronically ill, frail and in need of assistance or nursing home placement. Furthermore a difference in the health status and co-morbidity of those moving into a nursing home may vary between generations. Smoking has been a significant factor in the lives of the generation needing nursing home placement at this time. The care of residents having chronic obstructive pulmonary disease (COPD) and other smoking related diseases has become an increasing concern in nursing homes. The aim of this study is to investigate the characteristics, health and functional profile of residents with COPD in Icelandic nursing homes. This knowledge is needed for those who organize and provide nursing home care to be able to provide appropriate care. All residents in Icelandic nursing homes are assessed three times each year with a comprehensive and standardised instrument, the Resident Assessment Instrument. Data from all Icelandic nursing homes will be used and analysed with descriptive and analytical statistics. Findings will be presented at the congress.

Session 4 – Pulmonary interventions

O11

State of the art: New frontiers in interventional pulmonology

Erik van der Heijden

Radboud University Nijmegen Medical Center, NIJMEGEN, Nederland

Interventional pulmonology is a rapidly evolving field within pulmonary medicine necessitating further specialization of chest physicians in this field. It encompasses both diagnostic and therapeutic procedures. In this presentation the current state of developments in this field is briefly reviewed. Both (technological) developments on the diagnostic side and therapeutic side will be discussed. The topics discussed will range from developments in image quality of flexible bronchoscopes to new developments in airways stents placed by rigid bronchoscopy that has been available for many decades and still aims for maintaining or regaining airway patency. Newer fields for interventional pulmonology that will be discussed encompass techniques and tools for bronchoscopic lung volume reduction and bronchial thermoplasty, an endobronchial treatment for severe asthma. Endosonography will be discussed separately in Session 7

O12

Biomedical engineering and the use of prosthetics in modern pulmonology

Tómas Guðbjartsson

Landspítali University Hospital, REYKJAVÍK, Iceland

There is a great demand for tissues and donor organs due to end-stage organ failure. At present the number of patients that receive transplanted organs is determined by the limited supply of organs. The use of stem-cell based therapies, replacing missing or diseased cells has been studied extensively in recent years. The clinical results have been variable. The donor cells are isolated and cultured in vitro and later implanted, for instance in patients with severe cardiac or pulmonary failure. More promising is the use of tissue engineering in replacing tissues or whole organs. Then a scaffold, either natural or synthetic, is covered with the stem-cells in a bio-reactor and implanted into the patient. Two years ago a patient from Iceland became the first patient in history to undergo transplantation of a synthetic trachea scaffold, seeded with his own stem-cells. This successful case that was reported in the Lancet will be described in detail as an example of how stem cell technology was successfully combined with state of the art tissue engineering to save a patient's life.

Session 5 – Pulmonary Rehabilitation

O13

Early pulmonary rehabilitation (PR) in COPD

Thomas Ringbaek

Hvidovre Hospital, HVIDOVRE, Denmark

This talk reviews the literature on Early PR in COPD with focus on definition, selection of patients, training modality, compliance/drop-out, and outcomes. Besides, data on 49 COPD patients participation in early PR at Hvidovre Hospital are presented.

O14

The pros of patient involvement in PR as experienced by patients

Anne-Grethe Halding

Sogn og Fjordane University College, FØRDE, Norway

Persons living with COPD (Chronic Obstructive Pulmonary Disease) are confronted with extensive demands on coping resources during their illness course. PR (pulmonary rehabilitation) is recommended as part of COPD management to help people cope with these demands. Patient involvement in rehabilitation is emphasized; however, the concept is unclear, and we have yet limited knowledge about patient involvement and contextual and relational aspects of PR.

The aim of this lecture is to clarify the concept of patient involvement and explore patients' experiences of involvement during PR within a theoretical framework of patient involvement, rehabilitation and self-management.

Patient involvement is emphasized in literature on rehabilitation, health promotion and self-management. Literature on patient involvement emphasizes relational and contextual aspects. Patients have estimated group-based PR contexts to encourage their involvement through opportunities for sharing of knowledge and providing of mutual support. Through involvement they experienced social integration, role identification and development of new competences. Involvement during the PR program thus increased their engagement and self-management skills, self-efficacy, and hope for future health within illness.

Patient involvement appears as a core concept in PR to enhance patients' engagement in self-management and social integration during PR. The PR context should support opportunities for involvement in sharing of knowledge and reciprocal support among patients. Patient involvement in PR has potentials to support transitions towards health within illness. This field should be further explored.

O15

The pros and cons of the different dyspnoea instruments as an outcome measure in pulmonary rehabilitation

Elfa Dröfn Ingólfssdóttir

Reykjalundur, MOSFELLSBÆR, Iceland

Dyspnoea is a very complex and common symptom among pulmonary patients. It is also one of the main reasons for the patients to be referred to pulmonary rehabilitation (PR). Since PR is known to reduce dyspnoea, it is very important to be able to measure it, treat it and then to assess the effect of the given treatment.

By using specific tools or questionnaires, it is possible to quantify dyspnoea and use the results to describe the level of chronic disability and also to assess eventual changes after intervention.

Dyspnoea can be assessed both in real time and through recall and which approach is used can then lead to different results.

It is important to be explicit about the tools used, since they have to be "user friendly" in the setting of pulmonary rehabilitation. It is also essential to realize which domain or dimension the tools are addressing and have different technical issues in mind when choosing which tool to use.

O16

The pros and cons of different walk tests as outcome measure in pulmonary rehabilitation

Ragnheiður Harpa Arnardóttir

University of Akureyri and Akureyri Hospital, AKUREYRI, Iceland

One of the main aims of pulmonary rehabilitation (PR) is to increase exercise capacity. Exercise capacity must be assessed before and after PR to target the intensity of prescribed exercise and evaluate the effect of the PR. Laboratory tests are expensive and not always available, so the need for simple field tests is great. Several different field tests have thus been developed and validated for pulmonary patients and are widely used as outcome measure in PR. There are two main categories of field tests; timed walk tests and externally paced tests. The most frequently used test is the 6-minute walk test. Other timed tests are the 12-minute, the 3-minute and the 2-minute walk tests. Amongst externally paced walk tests the incremental shuttle walking test and the endurance shuttle walking test are most widely used. Lately, short speed-tests, like the 30 metre test, have been suggested for pulmonary patients. Different tests provide different information and the sensitivity for change differs also. The primary outcome in walk tests is meters walked, walkwork (m x kg), endurance time, or speed, depending on the test. Besides that, most test results include information about resting and end-exercise heart rate, dyspnoea, ratings of perceived exertion, exercise-induced hypoxemia, leg or lumbar pain, i.e. factors that can add valuable information about the patient's condition and motivation. Tests of longer duration or more strenuous tests are considered more informative, which probably explains why a timed test of 6 minutes is more frequently used than a 2-minute test. Until lately, most patients referred to PR have had moderate to severe COPD with seriously decreased exercise capacity. For patients with less decreased exercise capacity the ceiling effect of various tests must be considered, as ceiling effects could seriously underestimate the effect of PR. Endurance tests have been found more sensitive to change after PR than other field tests. The well-documented need for training tests can be a problem in clinical work, as this increases the time needed for testing, but is considered necessary for valid results.

Conclusion: All walk tests include some pros and cons in terms of surroundings/ equipment needed, time consumption, what information they yield, retest effects and sensitivity to change. The choice of test must suit the particular testing purpose, the patient's state of health and be performable at the clinic.

O17

The pros and cons of different activity monitors and self-rated activity scales

Margareta Emtner

Uppsala University, UPPSALA, Sweden

Accurate assessment is required to assess current and changing physical activity levels, and to evaluate the effectiveness of interventions designed to increase activity levels. The most commonly used measurement used to measure a person's physical

activity or sedentary time is self-report. A well-known drawback with self-reports is that they are depending on the reporting person's memory, sincerity and the type of definition that is used for physical activity. Other ways to assess a person's physical activity level is to use some kind of activity monitor, e.g. pedometers or accelerometers. Correlations between self-report and activity monitors are low-to-moderate and ranged in a recent review from -0.7 to 0.96, i.e. self-report measures of physical activity were both higher and lower than directly measured levels of physical activity. Among the accelerometers the Dynaport MiniMod, Actigraph GT3X and SenseWear Armband (all triaxial monitors) are the most valid monitors during standardized physical activities in patients with chronic obstructive pulmonary disease (COPD). The DynaPort MiniMod and Actigraph GT3X discriminate best between different walking speeds in patients with COPD.

Session 6 – RHINE study: New data

018

Changes in the prevalence of asthma, rhinitis and respiratory symptoms over a 20 year period

Christer Janson

Uppsala University, UPPSALA, Sverige

Background and aim: The Respiratory Health In Northern Europe study (RHINE) is part of the European Community Respiratory Health Survey (ECRHS). In the RHINE project we have gathered respiratory health data on a cohort that was 20–44 years of age at the start of the study in 1990 to 1994 and then followed in 1999–2000 and 2010 to 2012. The aim of this investigation is to present changes in the prevalence of wheeze, asthma and hay fever over a 20 year period in subjects from Iceland, Norway, Sweden, Denmark and Estonia.

Methods: The present investigation included approximately 11 000 participants that answered a postal questionnaire three times over a 20 year period. The participants were from three centres in Sweden and one centre each from Iceland, Norway, Denmark and Estonia. Wheeze was defined as having had wheeze or whistling in the chest during the last 12 months. Asthma was defined as having had an attack of asthma within the last 12 months or current use of medication for asthma. Hay fever was defined as answering yes to having hay fever or other kinds of nasal allergy.

Results: The prevalence of wheeze decreased from 20.4 to 18.6%. This decrease was mainly seen in subjects born between 1966 to 1973: 22.4 to 17.5, whereas the prevalence was relatively unchanged in subjects born between 1945 to 1955 and 1956 to 1965. The prevalence of asthma increased from 4.5 to 8.3% and this increase was relatively similar in all three birth cohorts. The prevalence of hay fever increased from 19.7 to 24.7. This increase was largest in the subjects born between 1966 and 1973: + 8.3 % units compared to +5.8 % units in subjects born between 1956 and 1965 and +2.1 % units in subjects born between 1945 and 1955.

Conclusion: This longitudinal study shows a decrease in the prevalence of wheeze and an increase in the prevalence of asthma and hay fever over a 20 year period. The decrease in wheeze and increase in hay fever was largest in the youngest birth cohort. The change in prevalence may be a combination of ageing and a birth cohort effect. Comparisons with cross sectional data in the three Swedish centres collected with similar methodology in the GA2LEN survey may make it possible to disentangle how much of this prevalence changes that is related to a birth cohort effect.

Session 7 – Diagnosis and staging of lung cancer

022

Recent Advances in the Staging of Lung Cancer: the 7th edition of TNM

Peter Goldstraw

National Heart and Lung Institute, Imperial College, DARTMOUTH, United Kingdom

The 7th Edition of the TNM Classification for Lung Cancer enacted in January 2011 was the first revision for 12 years and the most radical for 35 years. It has been estimated that for 1 in 6 cases this would result in a different stage being assigned compared with the 6th edition. The 7th edition is the first to incorporate carcinoid tumours into the TNM classification, and to emphasise the use of TNM in the clinical management and trial design for small-cell lung cancer (SCLC). It provided pathologists with the first standardised definition of 'visceral pleural invasion' and provided clinicians and researchers with an internationally agreed nodal map. There are now precisely defined anatomical boundaries for each nodal station, which alongside the new map, are recognised as the recommended means of describing regional lymph node involvement for lung cancer. A minimum number of lymph nodes to be removed by the surgeon and examined by the pathologist when establishing the pN category of any resection case has been included. The 7th edition incorporates additional size cut-points, new T sub-categories and a re-classification of cases in which there are additional tumour nodules in certain locations. Some of the resulting TNM stage groupings have been upstaged and some down-staged, more closely aligning stage with prognosis. In situations in which cases that have been traditionally treated surgically have been upstaged in the 7th edition one may wonder if these cases should now be considered for adjuvant therapy after complete resection. Where cases previously considered to be inoperable have been down-staged one may wonder if selected cases in these categories should now be considered for surgical treatment, albeit in a multi-modality setting. It is important that these suggestions are tested in appropriate clinical trials before such changes in the treatment algorithm are accepted as a new standard of care.

O23

Endosonographic staging of lung cancer

Erik van der Heijden

Radboud University Nijmegen Medical Center, NIJMEGEN, Nederland

Endosonography has evolved to be the first step staging procedure in patients with suspected lung cancer challenging the (former?) surgical cervical mediastinoscopy as gold standard. Esophageal ultrasound guided fine needle aspiration (EUS-FNA) and endobronchial ultrasound guided transbronchial needle aspirations (EBUS-TBNA or EBUS) allow for safe, reliable and complete mediastinal staging in an outpatient procedure under conscious sedation. In this presentation the current literature is reviewed and requirements and practical issues for starting a program on are discussed.

O24

CT screening of lung cancer – Danish screening study

Asger Dirksen

Copenhagen University, COPENHAGEN, Denmark

In the Danish Lung Cancer Screening Trial 4,104 men and women, healthy heavy smokers/former smokers were randomized to five annual low-dose multi-slice CT scans or no screening. Two experienced chest radiologists read all CT scans and registered the location, size and morphology of nodules, and nodules between 5 and 15 mm without benign characteristics were rescanned after 3 months. Growing nodules (>25% volume increase and/or volume doubling time < 365 days) and nodules > 15 mm were referred for diagnostic workup. In the control group, lung cancers were diagnosed and treated outside the study by the usual clinical practice.

Participation rates were high in both groups (screening: 95.5%; control: 93.0%; $p < 0.001$). Lung cancer detection rate was 0.83% at baseline, and mean annual detection rate was 0.67% at incidence rounds ($p = 0.535$). More lung cancers were diagnosed in the screening group (69 vs. 24, $p < 0.001$), and more were low stage (48 vs. 21 stage I–IIb non-small cell lung cancer (NSCLC) and limited stage small cell lung cancer (SCLC), $p = 0.002$), whereas frequencies of high-stage lung cancer were the same (21 vs. 16 stage IIIA–IV NSCLC and extensive stage SCLC, $p = 0.509$). March 2010 at the end of screening, 61 patients had died in the screening group and 42 in the control group ($p = 0.059$). 15 and 11 had died of lung cancer, respectively ($p = 0.428$).

Conclusion CT screening for lung cancer brings forward early disease, and at this point no stage shift or reduction in mortality was observed. Many more lung cancers were diagnosed in the screening group, and further follow-up is needed to decide whether the excess cases of cancer in the screening arm are due to overdiagnosis or of clinically relevance and would have killed the patient if not resected at an early stage.

Session 8 – COPD 1 Aspects on disease progression

O25

Can we recognize the rapid decliners in COPD?

Tarja Laitinen

University Hospital of Turku, TURKU, Finland

Objective: Lately several subphenotypes have been recognized in COPD. Patients whose FEV₁ is declining rapidly are considered to have poor prognosis and thus, they should be identified early on. Our aim in the present study was to examine the individual development of FEV₁ in the COPD cohort over the period of five years.

Methods: Study subjects (N=607) represented all severity stages of the disease (mean FEV₁ 56% of expected in the beginning of the study). They have had an average 8.3 spirometries performed during the follow-up period. To determine a five-year FEV₁ change for each patient we used the mixed-effects modeling for linear trend. We used the Bayesian analysis to determine the true decliners at the probability level of 95%.

Results: For majority (N=545/607) of the patients the FEV₁ trend was negative/declining (mean -40ml/year, SD +41ml). The trend correlated weakly to the baseline FEV₁ level ($R = -0.1$, $p < 0.01$). Based on the Bayesian model, 24% of the COPD patients were true decliners. Their annual loss of FEV₁ was 80 ml (SD +30ml), while among the rest of the patients the annual loss of FEV₁ was 30 ml (SD +30ml).

Conclusions: COPD patients show significant heterogeneity in the progression of disease when measured by FEV₁ trend. Bayesian analysis which uses simulations to determine the probability level for the observed trend (=individual-change-over-time) may offer novel approaches for personalized medicine.

O26

Why do COPD patients exacerbate?

Per Bakke

University of Bergen and Haukeland University Hospital, BERGEN, Norway

An exacerbation of Chronic Obstructive Pulmonary Disease (COPD) may be defined as an acute event characterized by worsening of the patients respiratory symptoms that is beyond normal day-to-day variation and leads to a change in medication. Exacerbations are associated with increased systemic and airway inflammation and may be caused by bacterial and respiratory viral infections. They may also be precipitated by environmental factors. Those reporting two or more exacerbations of COPD per year are often defined as 'frequent exacerbators'. This is a phenotype that appears to be stable over time.

The most common cause of exacerbations is bacteria. Bacteria are isolated from sputum using standard culture techniques in 40% to 60% of exacerbations. The three most common species isolated in COPD exacerbations are *Haemophilus influenzae*,

Moraxella catarrhalis, and *Streptococcus pneumoniae*. Less frequently, exacerbations may be caused by *Pseudomonas aeruginosa*, gram negative *Enterobacteriaceae*, *Staphylococcus aureus*, *Haemophilus parainfluenzae*, and *Haemophilus hemolyticus*. Bacteria in the lower airways have been hypothesized to disrupt host defense mechanisms leading to a vicious cycle of epithelial cell injury, defective mucociliary clearance, chronic mucous hypersecretion, and inflammatory cell infiltration, further damaging host defenses and leading to bacterial adherence and growth.

Rhinovirus is responsible for the common cold and has a role in COPD exacerbations. Studies using molecular biology polymerase chain reaction techniques have provided evidence of the role of rhinovirus in the cause of COPD exacerbations. In studies from the London COPD cohort, up to 40% of exacerbations were associated with respiratory viral infections. In the Northern hemisphere, COPD exacerbations are more common in the winter months and may also be more severe. The increase in exacerbations may be caused by the increasing prevalence of respiratory viruses in low temperature winter months or increased susceptibility to upper respiratory tract virus infections in cold weather.

Frequent exacerbators have a higher incidence of lower airway bacterial colonization and bacteria may also play a role in susceptibility to viral infection in COPD.

Epidemiologic data supports a role for air pollution in the cause of some COPD exacerbations with studies showing an increased risk of hospitalization for COPD with increased levels of pollutants. Air pollution likely causes COPD exacerbations through modulation of airway inflammation and immunity.

O27

What's new in COPD treatment?

Christer Janson

Uppsala University, UPPSALA, Sverige

The management of COPD has changes drastically over the last decades. Data from a large sample of COPD patients from primary health care centres (PHCC) in Sweden, the PATHOS study, shows that the incidence of exacerbations has decreased from 3.0/year 1999 to 1.3/year 2009. Parallel to this the pharmacological treatment of COPD has undergone large changes with the introduction of long acting muscarinic antagonists (LAMA) and fixed combinations of inhaled corticosteroids and long acting beta-2-agonists (LABA). The PATHOS study also shows that the structure for management of COPD has improved with higher proportion of PHCC with spirometers, COPD nurses and smoking cessation programs.

In the last few years a number of new pharmacological treatment options for COPD have become available. These include roflumilast a phosphodiesterase 4 inhibitor, indacaterol an ultralong LABA and two new LAMA substances: aclidinium and glycopyrronium. Bronchoscopic lung volume reduction has also emerged as a method that might benefit certain COPD patients with emphysema and hyperinflation.

Taken together new treatment options and optimal use of established treatment both pharmacological and non-

pharmacological has the potential to further improve the prognosis in COPD. Improving the structure of COPD management in primary and secondary care and a more aggressive approach in preventing exacerbations are also priorities.

Session 9 – Home mechanical ventilation

O28

A life at home on a ventilator – reflections through the lens of caring science

Berit Lindahl

Borås University College, BORÅS, Sverige

There is a great power in technology, it has a remarkable and often invisible impact on everything it touches or comes in contact with. In health care practices the mastery of technological equipment often means protecting health and life as well as possibilities to master critical illness and death. Technologies are certainly not value-neutral objects but have a value in itself and when a human being is connected to technology his/her body risks being objectified. However, technological developments and success in technological treatments have made it possible to treat people with advanced technological equipment not only in hospitals but also in the homes – one such treatment is home mechanical ventilation (HMV).

The presentation put forward various aspects of life situation and impact on family life from an inside perspective when living a life at home on a ventilator. Research findings, both from an adult and child perspective, generated through qualitative research methods will be critically reflected on as well as the use of theories and existential philosophies as means to help health care personnel to encounter the ventilator assisted person and perform good quality care. Research has shown that there is a lack of knowledge about the physical and existential needs of the ventilator assisted person. In what way do place and space interact in the care process? There may be a risk when professional care moves from the hospital to the home. This means that there might be a risk that routines, security regimens and design of technology that originate from hospital norms and values thoughtlessly also move into people's homes. This situation is often connected to that various professionals enters into the home and suddenly private life becomes public.

029

HMV at South West Hospital District in Finland

Ulla Anttalainen

Turku University Hospital, TURKU, Finland

In the beginning of year 2004 the coordination of the treatment of neuromuscular respiratory insufficiency patients was started in Turku University Hospital. Before that time acute treatment decisions were made in emergency room or in intensive care unit and many times the patient himself could not express his own will. To avoid these kind of situations, the HMV unit, consisting one doctor (anesthesiologist) and one nurse (with ICU background), started systematically visit neuromuscular patients during their control visits in neurology or pulmonary wards. They explain the patients how the disease most likely affects their breathing, eating and motion etc. and what we can do to help the symptoms. They also can do home visits for example to titrate the non-invasive ventilation or to evaluate the need for hospital treatment. HMV unit coordinates the treatment between special and primary health care, and in hospital neuromuscular patients are treated in co-operation with HMV unit and pulmonology or neurology wards. With active HMV unit, we have significantly reduced the need for emergency tracheotomies, ICU treatment days or hospital days generally in the neuromuscular patients leading to lower costs also in the treatment.

030

Management of airway secretions in home mechanical ventilation

Tiina Andersen

Haukeland University Hospital, BERGEN, Norway

Home mechanical ventilation provides long term mechanical ventilation support for persons with chronic respiratory failure, who predominantly have a neuromuscular disorder (NMD). Ventilatory support aims to achieve adequate ventilation, which can only be assured if the airways are clear of secretions. Retained airway secretions lead to reduced gas exchange and will form favorable conditions for bacteria to grow. This may lead to pneumonia, which is the most frequent cause of death in this patient group. Therefore, it is important both to prevent and to treat effectively accumulation of airway secretions in persons with NMD.

The aim of the respiratory physiotherapy in persons with NMD is to increase inspiratory volumes and expiratory flow. It involves daily deep breaths to prevent atelectasis and stiffness of thorax, airway clearance and especially effective assisted cough. In non-invasive patients, techniques such as glossopharyngeal breathing, air stacking, manually assisted cough and mechanical insufflation-exsufflation (MI-E) are used alone or in combination. In invasive patients, MI-E followed by short suction in the cannula and just below, may be a more effective and gentle alternative to deep tracheal suction.

Tailoring the home based program for airway secretion management is based on individual assessment of the patient (i.e. measurements as peak cough flow and vital capacity), evaluation

of the cough quality and the bulbar function, and patients resources to master the home treatment. In practice, a therapeutic trial is conducted in most NMD patients who present with a manifest airway secretion problem, to determine the effect and expected feasibility of the actual technique in the home setting.

031

Choice of ventilator in LTMV (Long term mechanical ventilation)

Ove Fondenes

Haukeland University hospital, BERGEN, Norway

The lecture will focus upon how to choose the appropriate device, method and settings for LTMV and which factors one needs to consider. Noninvasive ventilation is preferable whenever the patient has sufficient bulbar function to remove secretions. In life-supportive treatment ventilators with internal batteries and enhanced alarm capabilities are required, however patients with only nighttime hypoventilation may be adequately treated with simple bilevel positive pressure (BiPAP) devices. Patients with additional daytime hypoventilation will usually be better off with a more sophisticated ventilator with internal batteries and volume controlled ventilation by a mouthpiece if secretion stagnation is a problem. A wide range of cross-over / hybrid ventilators have been marketed during the last few years. Some ventilators offer the choice between passive and active exhalation valve circuits in one device and many devices offer different kinds of variable pressure support on the basis of a so called volume guarantee or safety volume. Some of these automatic algorithms are quite complex and in general the pressure response to changes in tidal volume or average minute ventilation varies significantly between different manufacturers. The theoretical advantages of the hybrid ventilation modes remains to be proved in clinical studies although clinical practice has rapidly incorporated these machines and modes already, it would seem. Choosing the appropriate settings of the ventilator in supportive treatment requires appropriate monitoring capabilities and experienced clinicians with a keen eye on the underlying pathophysiology.

032

Morbid Obesity and Ventilation

Eva Lindberg

Uppsala University, UPPSALA, Sweden

Overweight is a well-known risk factor for sleep apnea syndrome and respiratory failure due to obesity hypoventilation syndrome (OHS) is one of the most severe consequences of obesity. Since 2009 almost 50% of Swedish patients who are prescribed home mechanical ventilation get the treatment due to an underlying OHS. Definitions, prevalences, symptoms and treatment of OHS will be discussed during the Session.

Session 10 – Beginning COPD

033

The challenge of experienced stigmatisation for self-infliction among persons living with COPD- can health care personnel make a difference?

Anne-Grethe Halding

Sogn og Fjordane University College, FØRDE, Norway

Chronic obstructive pulmonary disease (COPD) results from gene-environment interaction. Cigarette smoke is the most commonly encountered risk factor; however, it is not the only risk factor. Tobacco control is considered the most effective preventive intervention, and smoking cessation is a key element in health personnel's counseling of patients who smoke.

The aim of this contribution is to explore COPD patients' experienced stigmatization for self-infliction, and to discuss challenges of possible 'victimblaming' in conversations between health care personnel and patients.

Persons' experiences of health and illness are influenced by their history and the culture in which they live, including prevailing norms for lifestyle and tobacco control. A strong focus on the individual's responsibility for health and lifestyle may individualize the responsibility for diseases associated with unhealthy lifestyles as well. Health care personnel are obliged to counsel patients on lifestyle, in special smoking cessation. Methods used in tobacco control have been under debate because of the danger of stigmatizing the smoker. Experienced stigmatization is a moral devaluation and a threat towards a person's ego identity.

During encounters with members of society and health care personnel, persons living with COPD have experienced stigmatization and blame for having a self-inflicted disease. Negative emotions and defensive actions provoked by experienced stigma may hamper help-seeking, self-management, and rebuilding of a positive identity during long-term illness.

This challenge should be considered in planning and conducting of PR. More attention toward the complexity of tobacco control and smoking cessation support, as well as the threat of stigmatization, may conquer negative effects of stigmatization and strengthen partnership in self-management.

034

The experience of families with beginning COPD

Guðrún Hlín Bragadóttir¹, Helga Jónsdóttir², Þorbjörg Sóley Ingadóttir², Bryndís S. Halldórsdóttir²

¹*Háskóli Íslands, KÓPAVOGUR, Iceland*

²*University of Iceland, REYKJAVÍK, Iceland*

Abstract COPD often progresses for years with insidious decline in lung function with the onset of symptoms out of context with airflow limitation. Adjustment to symptoms in daily life is gradual and the disease often moderately advanced when healthcare is

finally sought. Experience of shame because of smoking can hinder help seeking.

The purpose of this study is to gain insight into the experience of living with COPD at beginning stages; how persons come into terms with the disease, how symptoms develop, manifest and affect life as a whole. The research question is: What is the experience of families with beginning stages of COPD?

The methodological approach was interpretive phenomenology. Participants had already finished participation in an intervention study on individuals with COPD, stage II and III and family members, Partnership to enhance self-management of people with COPD and their families. In continuance with the intervention study further data was collected through four family-focus group interviews (n=35) and a subsample of eight families. Data from both family interviews and focus groups are the data of this study.

Results are analyzed into themes; Preliminary analysis reveal self-inflicted concealed disease, fighting in silence and to be enclosed in own addiction as some of the major ones.

Further analysis will be presented at the conference.

035

Bodily (dis)integration; physical aspects and phenomenal experience of smoking

Marianne Klinke, Helga Jónsdóttir

University of Iceland, REYKJAVÍK, Island

Background: The experience of being addicted to smoking is multidimensional. Of particular concern is the lack of concepts to describe breakdown that occurs in bodily coherence when people apparently ignore the physical consequences of smoking tobacco in spite of intellectually recognizing their addiction to nicotine. This incoherence makes it difficult to sufficiently describe and establish efficient strategies to come to terms with the urge of smoking.

Objective: Articulate the concepts "body image" and "affordances" to illustrate the phenomenal experience of being addicted to nicotine.

Methods: The phenomenal experience will be targeted by a description of physical aspects of addiction and the personal bound subjective experience. The concepts 'body image' and 'affordances' will be introduced as a way to integrate these two dimensions. Patient cases are used to illustrate the applicability of the concepts in the phenomenological investigation of smoking.

Results: Any imbalance between the physical aspects of smoking and personal experience is pathological and may lead to suppression of the consequences of smoking. Pathological body image disturbances are not a deficiency of own self-knowledge per se but should be regarded as a tricky dispensation of self-referential information related to nicotine addiction. This preservation of self-knowledge often leads to a subtle experience of shame.

Conclusion: Understanding the disintegration of bodily experience in tobacco addiction and the ability to communicate this experience may provide a launch pad of designing new approaches to health care for people addicted to nicotine.

ORAL

036

The relationship between stress management/relaxation exercises and anxiety, depression, health related quality of life and smoking

Kristín Rósa Ármannsdóttir, Helga Jónsdóttir

University of Iceland, REYKJAVÍK, Iceland

Background: The prevalence of anxiety and depression among people with COPD and the lack of health promoting acts, good, appropriate and beneficial interventions to decrease anxiety, depression and stress among people with COPD are of concern. Research on stress, stress management and relaxation is lacking.

Methods: A cross-sectional study design, based on baseline data from an interventional study on patients diagnosed with COPD: "Partnership to enhance self-management of people diagnosed with chronic obstructive pulmonary disease and their families" (N=100). The research question is: Is there a relationship between stress management/relaxation exercises and anxiety, depression, health related quality of life and smoking?

Results: People who used stress management scored significantly higher on anxiety and depression HADS scale compared to those who did not do anything to control stress. There was also a significant difference on mean score on the St. George's Respiratory Questionnaire on health related quality of life between those who used stress management and those who did not. People who did stress management and/or relaxation exercises scored higher on the scale which suggest significantly more health reduction. No relationship was found between smoking behaviour and the using of stress management and relaxation exercises.

Conclusion: There seems to be a relationship between actions to control stress and undertake relaxation exercises and how people with COPD experience and evaluate their health, anxiety and depression. This can be due to some benefit that people find from controlling stress and doing relaxation exercises, which has been described in the literature. Further researches on the stress management and relaxation effects on anxiety, depression and health related quality of life are warranted.

Session 11 – Lung infections: Broken defences-vulnerable lungs

037

Ventilator Induced Lung Injury – Mechanical strain and cellular endurance

Sigurbergur Kárasón

Landspítali University Hospital, REYKJAVÍK, Iceland

Ventilator treatment is often life-saving but has the inherent risk of causing damage to lung tissue. This has been confirmed both in animal and clinical studies where there is an obvious link between ventilator settings and outcome which has lead to the creation of the term; Ventilator Induced Lung Injury (VILI).

VILI is believed to mainly reflect cellular injury caused by

overdistension (baro/volutrauma) and repetitive collapsing/opening of alveoli (atelectrauma) and oxygen toxicity. This may cause an increase in capillary/alveolar permeability and initiate a cascade of proinflammatory cytokines and increased translocation of bacteria from the lung into the bloodstream, producing and propagating both a local and a systemic inflammatory response (biotrauma) that may lead to multiorgan dysfunction.

Patients with Acute Respiratory Distress Syndrome (ARDS) are the most challenging for intensive care physicians to provide with adequate ventilator treatment. The only method of mechanical ventilation that has been shown in randomised trials to improve survival of ARDS patients is the use of low tidal volumes (6 mL/kg predicted body weight) and plateau pressures \leq 30 cmH₂O. However, it is still not known how to individualise ventilator therapy, e.g. how to set PEEP, which is perhaps reflected in the high mortality of patients with ARDS which is still between 30–60%.

Many methods of monitoring respiratory mechanics to guide ventilator treatment have been proposed but none has gained popularity during clinical circumstances. Also, the injury to the lung is heterogeneous so acquiring one optimal ventilator setting for the whole lung may be impossible. High Frequency Oscillatory Ventilation (HFOV), keeping the lung quite still during treatment, was hoped to diminish lung injury and improve survival but recent clinical trials on early use of HFOV in ARDS patients have showed either no difference or worse outcome compared with conventional ventilator therapy.

It therefore seems that there is still a lack of applicable clinical methods to measure respiratory mechanics and estimate the mechanical strain of lung tissues to guide conventional ventilator treatment in the purpose of attenuating VILI.

It would also be of value if it would be possible to increase the tolerance of the lung cells and tissues of the mechanical strain they have to endure during ventilator treatment.

These topics and recent studies on them will be addressed in the lecture.

039

Pneumonia due to influenza; is there a genetic susceptibility ?

Magnús Gottfreðsson

Landspítali University Hospital, REYKJAVÍK, Iceland

Pneumonia due to influenza virus is the most severe manifestation of influenza, and most patients who die due to influenza have pneumonia. Pre-existing humoral immunity plays an important role in determining the severity and outcome of seasonal influenza. However, it has been suggested that other host factors, possibly genetic, play an important role in the pathogenesis of influenza, especially when no pre-existing immunity is present. Introduction of novel influenza strains during pandemics can be viewed as a natural experiment, enabling researchers to identify these potential factors. Familial aggregation analysis of fatal influenza during the Spanish flu in Iceland, 1918 did not provide conclusive evidence for such factors. However, recent studies suggest that interferon-inducible trans-membrane (IFITM) protein 3, previously identified as a strong, non-selective inhibitor of viral replication in vitro, has

a role in intrinsic resistance to influenza A infection in vivo in mice and humans. More specifically, one SNP rs12252, which results in a truncated IFITM3 protein missing the first 21 amino acids, was shown to be three times as common in patients hospitalized during the 2009 H1N1 influenza A pandemic, compared to ethnically matched Europeans. At the present time, the implications of these findings for public health are unclear. More research is needed to confirm the role of IFITM3 and other potential host factors in other influenza infections, such as the emerging H5N1 and H7N9 strains. Ultimately, such studies could identify pathways for drug development and facilitate optimization of health care resources.

O40

Bronchiectasis and Cystic Fibrosis; pathogens and the airway epithelium

Ólafur Baldursson

Landspítali University Hospital, REYKJAVIK, Iceland

Bronchiectasis (BE) is a chronic disease characterized by a vicious cycle of infection and inflammation, leading to bronchial wall destruction, abnormal widening of the airway lumen. Symptoms may range from those of intermittent airway infections to a chronic systemic inflammatory state advancing to respiratory failure. The etiology is diverse, from classic BE associated with TB or pertussis, to localized molecular defects in cilia structure or ion channels as in cystic fibrosis (CF). In addition, studies indicate that the prevalence of BE in COPD may be significant, and relevant for therapeutic strategies.

In BE due to all causes, *Pseudomonas aeruginosa* (Pa) infection is particularly difficult to eradicate and generates destructive inflammatory response. It is therefore important to attempt to better understand the interactions between this pathogen and the airway epithelium. The unusual beneficial effect of macrolide antibiotics on Pa infection in BE is of particular interest to us, since this class of antibiotics is not designed to eradicate Pa.

We used a human airway epithelial model to study these effects and found that Pa disrupted the epithelium rapidly in vitro. However, pretreatment with azithromycin protected the airway epithelium from this effect. In a subsequent study, using airway epithelia in vitro, we found that Pa isolates from CF patients were significantly less invasive than wild-type Pa, and that this effect depended on soluble factors.

The data suggest that careful definition of the microenvironment during Pa airway infections may generate novel therapeutic strategies.

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Session 12 – Difficult to treat asthma; what do we know and where are we going?

O41

Introduction with definition, prevalence numbers, characteristics and different phenotypes. What are the issues we are dealing with?

Anneke ten Brinke

Medical Centre Leeuwarden, MOLENEND, Nederland

Asthma is a heterogeneous condition. Most patients with asthma can be adequately treated with inhaled corticosteroids and bronchodilators. However, a minority of patients has persistent symptoms, frequent exacerbations or loss of lung function. According to recent international consensus, these patients are labelled as "difficult-to-treat asthma". The causes of "difficult-to-treat asthma" are multiple, and may vary from poor adherence or inadequate inhalation technique to persistent exposure to aggravating factors. Only a small proportion of patients with "difficult-to-treat asthma" has truly "severe, refractory asthma" and is candidate for novel therapeutic approaches. By using a recently published algorithm, patients with "severe refractory asthma" can be distinguished from patients with "difficult-to-treat asthma". At least three phenotypes of severe asthma in adults have been consistently identified. These phenotypes include: 1) severe, early onset (allergic) asthma 2) severe, late onset asthma with persistent eosinophilia, and 3) a less well defined type of asthma, dominated by highly symptomatic, obese women with late onset asthma. In this talk the clinical and pathobiological characteristics of these 3 subgroups will be discussed and the first steps towards targeted phenotype-specific treatment will be explored.

O42

Evaluation of the difficult to treat patient in the clinic and treatment adherence

L Bjermer

Skåne University Hospital, LUND, Sweden

Despite modern treatment modalities, still a large number of patients are insufficiently controlled. Uncontrolled patients can be divided in to three categories. A) Easy to control, B) Difficult to control and C) Severe refractory asthma.

In the 'easy to control' group, control can be achieved after some minor or moderate adjustments. A careful check on inhalation technique ruling out technical problems and non-intentional non adherence is an important step. Other important means are to identify environmental trigger factors and to give the correct medication to the right patient.

'Difficult to treat patients' represent the daily life challenge and constitutes the largest fraction of uncontrolled asthmatics. Important factors that need to be considered are 'personality

traits', 'complex environmental settings' and interfering 'co-morbidity'. Anxiety and depression is more prevalent among asthmatic patients compared to general population and there is a positive association with degree of disease severity. For treatment success it is of utmost importance to understand the individual need and disease perception and to be sure that the caregiver and the patient agree upon the same treatment goals (concordance). Interfering co-morbidity is another important factor to consider. The majority of asthmatics suffer from concomitant rhinitis, mostly rhinosinusitis. It is well known that an uncontrolled or undertreated rhinitis increases the risk of getting an asthma exacerbation with or without need for hospitalization. Some patients with RS also have obstructive sleep apnea increasing the biological stress of the lower airways even more. Gastroesophageal reflux (GERD) is another possible contributing co-morbid condition that should be ruled out.

When adherence is good, environmental factors are controlled and comorbid-conditions are treated, severe 'refractory asthma' can be stated when the patient do not respond to high dose of inhaled corticosteroid treatment. The reason for non-response could be either that the dominating inflammation per se is corticosteroid resistance or refractory when given in pharmacological doses. True steroid resistance does exist although rather seldom. The most common reason for steroid resistance is either the inflammation predominantly is situated in the peripheral small airways difficult to reach by the inhaled route. Another reason can be acquired steroid resistance due to external factors that are possible to change, at least in theory. Examples are Obese or smoking asthmatics or asthma developed in athletes. True genetically determined resistance to corticosteroids also exist, although in a small fraction of patients. On the other hand, most of the patients have some degree of inflammatory components non-responsive to corticosteroid therapy. It is well known that corticosteroid therapy do not prevent lung function and do not influence important parts of the asthmatic inflammation involved in airway remodeling. To identify these mechanisms and to define new treatment modalities also for these components is probably much more important than to identify a small subset of patients with general and genuine corticosteroid resistance.

O43

Allergic and nonallergic factors in difficult to treat asthma

Paula Kauppi

Helsinki University Central Hospital, HELSINKI, Finland

Aim: to study factors affecting severe asthma. Asthma is the most common long-term disease affecting population from teenagers to adults and elderly people. Despite being very common, only a small minority suffer from severe disease, and deaths because of asthma are rare. Exacerbations, hospitalizations, emergency department visits and work- disability in addition to asthmatic symptoms are signs of deteriorating asthma control. Recurrent episodes of exacerbations are markers of difficult disease.

Methods: In 2010, self-estimated asthma severity, co-morbid allergic conditions, use of asthma medication and health care

services were assessed in the Finnish pharmacy survey. The study included 1114 patients purchasing asthma or allergy medication in pharmacies all across the country.

Results: Older age, food allergy severe enough to need a self-management plan and atopic eczema were associated with severe asthma.

Previously, in addition to older age, regular long-term smoking and diminished lung function have been reported as risk factors for severe asthma and exacerbations. In 2008 in Finland, 52% of the hospital days in asthma were used by patients 65 years or older, and only 15% by patients 15 years or younger.

Both indoor and outdoor air problems may provoke respiratory symptoms. Skin prick test positivity against cat or dog and having a pet at home is reported to increase risk of hospitalization for asthma. Likewise, both increasing concentrations of ozone and NO₂ have also been found to increase risk of hospitalizations.

Self-estimated disease severity and work-ability predict well coping with disease not only in asthma but also in other chronic diseases such as low-back pain or depression. In a Finnish public sector employee study, asthma increased the risk of long-term work disability by 1.8-fold. Risk for permanent work disability in asthma was 1.9-fold and in asthma and depression together 6.8-fold.

Conclusions: When aiming to better asthma control in difficult to treat asthma, it's important to take a broader perspective to patient's situation and consider the role of life style factors, adherence to the treatment, allergies and co-morbidities.

Session 13 – Tuberculosis in the Nordic countries

O45

Our battle against tuberculosis in the mirror of time

Gunnar Boman

Uppsala lungmedicin, UPPSALA, Sverige

During the last part of the 19th century the situation was very severe for persons suffering from "consumption" (tuberculosis - TB). Most of them were poor with long working hours and living in overcrowded conditions. Around 1900 people in the Nordic countries began to organise the battle against TB. In 1901 "Danmarks Nationalforening til Tuberkulosens Bekaempelse" started, in 1904 "Svenska nationalföreningen mot tuberkulos", in 1906 the Icelandic Sanatorium Association, in 1907 "Föreningen för Tuberkulosens Bekämpande i Finland" and in 1910 "Den norske Nationalforening mot Tuberkulosen". There were very few hospital beds for the "consumptives" until the first public sanatoria opened: Hålahult 1900 and Österåsen 1901 (SWE), Lyster 1902 (NO), Nummela and Takaharu 1903 (FIN), Silkeborg 1903 (DK) and Vifilstad in 1910 (IS). The TB mortality decreased slowly in Denmark, Norway and Sweden, while it remained high in Finland. In Iceland the mortality increased until 1930 and then dropped dramatically. The advent of effective chemotherapy in the form of

PAS from Sweden and streptomycin from USA accelerated the decline in the late 1940s. The battle against tuberculosis illustrates the roots of many aspects of today's "respiratory medicine".

O46

Experience of program management of tuberculosis in Finland

Rauni Ruohonen

Filha, HELSINKI, Finland

In 1990s the tuberculosis (TB) problems started to increase in the neighbouring areas of Finland. Same time the knowledge on TB decreased among our health care workers (HCWs). In this situation development of a written National TB program was seen necessary. It was prepared in broad cooperation between different stakeholders aiming at national consensus in different measures of TB control. The program includes practical guidance for HCWs as well as strategic outlines. The preparation period improved the understanding and cooperation between different parties. The program was published in 2006. An expansive training program in its implementation started on 2007 and continues still today.

Several questionnaires were made to the district health services to follow the progress during the implementation, in 1999, 2004, 2009 and 2012. The answers show that the TB control has markedly improved. Responsibilities have been clarified, responsible persons for TB nominated in most hospital districts in infectious disease, pulmonary disease and pediatric disease departments. District guidelines have been developed and cooperation between different local parties has improved. Directly observed treatment has improved and treatment outcome monitoring was taken in use. HCWs appreciate the national and district guidance as well as regional training events organized in frame of the program. Infection control has improved. This is partly due simultaneous development of national prevention program for SARS and bird flu. Establishment of a national expert group for treatment of difficult TB cases has further improved the cooperation between the specialists in infectious, pulmonary and pediatric diseases and empowered the local HCWs in treatment of challenging patients.

O47

Tuberculosis among resident immigrants in Iceland

Thorsteinn Blöndal, L. Gudmundsson, K. Blöndal

REYKJAVÍK, Iceland

During the period 1998–2012, foreign-born persons from 32 countries accounted for 61.9% (109/176) of the tuberculosis (TB) cases in Iceland. Out of those 109 persons 45.4% were diagnosed during the first year after entry to the country, 53.6% during the first 2 years and 73.7% during the first 5 years. TB was more prevalent among the persons of South-East Asian origin: 18.8% were from the Philippines, 8.5% from Thailand and 8.0% from Vietnam. One third of the resident immigrants in Iceland were from Poland. However, among them TB was rare.

During the period 1998–2012, several micro-epidemics of tuberculosis emerged among subpopulations of the resident immigrants.

TB is rare among native Icelanders. The main target group for active TB screening in Iceland are the immigrants from the South-East Asia during their first year of stay in the country, even if considerable proportion of TB cases emerges up to 5 years after the entry. It is important to continue immigrant screening at entry among the persons from the high TB prevalence countries in order to keep the incidence of TB stable.

Session 14 – Partnership with individuals and families facing the existence of COPD

O51

Partnership with individuals and families facing the existence of COPD

Helga Jónsdóttir¹, Alda Gunnarsdóttir², Bryndís S. Halldórsdóttir², Gunnar Guðmundsson³, Ingibjörg K. Stefánsdóttir², Jón Steinar Jónsson⁴, Rósa Jónsdóttir², Þorbjörg Sóley Ingadóttir²

¹Faculty of Nursing University of Iceland, REYKJAVÍK, Iceland

²Landspítali Reykjavík, REYKJAVÍK, Iceland

³Lunngnadeild Landspítala, Læknadeild Háskóla Íslands, REYKJAVÍK, Iceland

⁴Heilsugæsla höfuðborgarsvæðisins, Læknadeild Háskóla Íslands, REYKJAVÍK, Iceland

Background: Self-management educational programs have been crucial in efforts to manage COPD in people with an advanced disease, but have achieved less attention in people with a beginning disease.

Methods: RCT, participants recruited in healthcare centres and lung physicians' offices. Intervention was provided for 6 months with a subsequent follow-up for 6 months. Control group received usual care. Intervention: 3–4 individual/family conversations, smoking cessation and one group meeting.

Results: Of 291 invited individuals 72 rejected invitation, 100 were excluded or not reachable, 119 were randomized into experimental and control groups. Thirty six family members participated. One fourth didn't know about disease. More than 50% smoked, mean age was 59 years. There was no difference between experimental and control groups on health related quality of life on St. Georges Respiratory Questionnaire, anxiety and depression on Hospital Anxiety and Depression Scale, self-reported physical activity, smoking status and self-reported exacerbations the previous six months. Individuals in experimental group were significantly less influenced by COPD on the Illness Intrusiveness Rating Scale. Satisfaction with participation in research was good (experimental group 87–98%, control group 65–80%).

Conclusions: Limited effectiveness is contributed to considerable gains of participation in the control group, as well as timing, length and relatively low intensity of the partnership intervention, which suggests how to develop healthcare for this growing group of patients.

Session 15 – Biomarkers in asthma – diagnosis and management

052

Clinical significance of different phenotypes in asthma

Vibeke Backer

Bispebjerg University Hospital, COPENHAGEN, Denmark

Objective: Asthma is the most frequent chronic illness in adolescents and young adults living in western societies. Asthma is characterized by respiratory symptoms and signs of reversible airway obstruction. The current diagnostic tools include various questionnaires, physiological measurements and biomarkers, but many of them are inaccurate or require set-ups only possible in hospital settings. There is a need for diagnostic tools that are valid, standardized and simple to use.

Fractional exhaled nitric oxide (FENO) and inhaled mannitol are examples of a biomarker and a physiological measurement respectively that are safe, standardized and easy to use. FENO correlates to sputum inflammatory phenotype and is regarded as a biomarker for eosinophilic bronchial inflammation in asthma. A close association between AHR to mannitol and FENO has also been found in asthmatic subjects with eosinophilic phenotype, whereas neutrophilic phenotypes have low FENO and weak response to mannitol.

Conclusion: There seems to be different phenotypes, which might respond differently on treatment with inhaled steroid.

054

Airway hyperresponsiveness in asthma

Maria Juusela

HUS Medical Imaging Center, HELSINKI, Finland

Airway hyperresponsiveness (AHR) in asthma is complex. Airway inflammation in asthma originates from a multicausal pathway in three different processes: acute inflammation, chronic inflammation and airway remodelling.

AHR is defined as a reactive narrowing of the airways, which leads to airflow limitation. AHR has been traditionally divided into two components, the transient and the persistent.

AHR is measured by different methods, direct or indirect, with varying criteria of abnormality. A direct provocative agent, such as histamine or methacholine, acts on airway smooth muscle (ASM) cells. This approach is in contrast to the indirect methods, which trigger the induced ASM contraction and airway flow limitation by causing an excess release of inflammatory mediators, which cause a cascade that determine in ASM constriction. The use of inhalation synchronized dosimetric tidal breathing methods has become more popular recently, because of the high reproducibility and repeatability of this breath actuated method. Interpreting the results of AHR is method dependent. The PD15FEV1 value combines the information of bronchial hypersensitivity with the reactivity of Δ FEV 1–15%.

The GINA Guidelines suggest the use of BHR testing following a normal spirometry (<http://www.ginaasthma.org>) for further examinations of undiagnosed respiratory symptoms. Free run test is frequently used in assessment of exercise-induced bronchoconstriction in children. The ERS Task Force recommends the use of BHR testing in titration of anti-inflammatory therapy. The Finnish Guidelines for asthma diagnosis and consider AHR to histamine PD15 = 0.400 mg and methacholine PD20 = 0.600 mg specific for a physician diagnosed asthma. Recently, Δ FVC at PC20 was listed to have a good reproducibility in assessment of small airway obstruction.

Findings of my thesis (<http://urn.fi/URN:ISBN:978-952-10-8176-7>) suggest that quantitative assessment of BHR by different cut off levels provides a tool for characterization of phenotypes of airway disorders in epidemiological studies.

1. Prevalence of BHR was 21% in the general adult population in Helsinki. Prevalence of BHRms defined as histamine PD15FEV1 = 0.4 mg was 6%.
2. The main risk factor for BHR was decreased FEV1. Impaired MEF₅₀ was an independent determinant for BHRms regardless of age.
3. Of the subjects with BHR 69 % were ever smokers, and 32% current smokers. BHR was dose dependently associated with pack years of smoking.
4. Atopy combined with obstruction yielded a six-fold risk for BHR. Multisensitization yielded a four-fold risk for BHRms.
5. Obesity (BMI > 30 kg/m²) was not significantly associated with BHR.
6. Exhaled nitric oxide (FENO) leveled the BHR severity only among the nonsmokers.

Juusela M et al. *Int J Circumpolar Health* 2008; 67(4): 308-317.

Juusela M et al. *Clin Respir J* 2012; DOI:10.1111/j.1752-699X.2011.00279.x.

Juusela M et al. accepted for publication *ERJ* 2013.

055

Novel Therapies in Asthma – The Biomarker Era?

Andrew Menzies-Gow

Royal Brompton Hospital, LONDON, United Kingdom

The presentation will cover why biomarkers are needed to guide novel therapies in severe asthma. The role of blood and sputum eosinophils to guide targeted anti-IL-5 therapy will be reviewed. The role of atopy and exhaled nitric oxide measurements will be discussed. The concept of Th2 high and low asthma and its implications for novel targeted therapies will be discussed. The paucity of biomarkers both for non-eosinophilic asthma and to use as a guide to decide in which patient endotypes to perform bronchial thermoplasty will be reviewed.

056

Written Self Management Plan: a useful tool for asthma and COPD patients experiencing exacerbation at home?

Liv Hasund Eid, Helga Groa Sigurdardottir, Lena Kristin Jørgensen, Kari Hvinden

Glittrelinikken, HAKADAL, Norway

Background: The purpose of a written Self Management Plan is to have a useful tool for patients with asthma and COPD to manage exacerbations at home. The Self Management Plan is prepared during pulmonary rehabilitation by a nurse, in collaboration with the patient and a physician.

Objectives: Is an Self Management Plan a useful tool for asthma and COPD patients when experiencing exacerbation at home?

Method: Sixty-six patients (51 asthma, 15 COPD) received during a four week in-patient occupational pulmonary rehabilitation an Self Management Plan. Sixty-four vs. 57 patients answered a follow-up questionnaire 6 vs. 12 months post pulmonary rehabilitation. Patients were asked about the usage of inhalation medicine and if the Self Management Plan was useful when experiencing exacerbation. The questionnaire contained three main questions and follow-up questions; closed and open, as well as a scaling question.

Main Results: Fifty-five (86%) patients used the Self Management Plan after 6 months. 7 and 2 patients (11% and 3%), respectively reported no effect or that the Self Management Plan was not suitable. Fifty (88%) used the Self Management Plan 12 months after PR; 2 (4%) patients had not used the Self Management Plan and 2 (4%) replied the Self Management Plan was not suitable. Necessity of the Self Management Plan on a scale from 0–10 was after 6 and 12 months 8.5 and 8.3, respectively. Inhalation medicines were used as prescribed. Several patients replied that the Self Management Plan resulted in a better communication with their physician. Some patients showed the Self Management Plan to their employer for a better understanding of the actual patient's disease.

Conclusion: Patients with asthma or COPD experience the Self Management Plan to be a useful tool when experiencing exacerbation

057

Patient participation during hospitalization: Contributions and hindrances

Bente Bjørnsland

Hedmark University College, ELVERUM, Norge

Objective: Patients suffering from chronic obstructive pulmonary disease (COPD) do often need hospitalization related to their breathing difficulties. This study aims to illuminate what contributes or not to patient participation during hospitalization.

Methods: A qualitative descriptive approach was used. Two

women and four men with severe COPD, age 53–74, were in-depth interviewed at home after hospital discharge. Data were transcribed verbatim and analyzed in inspiration of Malterud's systematic text condensing.

Findings: The analysis resulted in two main themes and nine sub-themes. The first main theme, Factors by the informer that contributes or hinders patient participation, implies that they experienced patient participation when they were exact about their needs and conscious about their knowledge. Breathing difficulties, lack of strength and little faith in their own knowledge and experiences was a hindrance for participation. The second main theme, Factors by the nurse that contributes or hinders patient participation, showed that the nurse contributed to patient participation when she was understanding and caring, when she was familiar with the patient and had time to offer. Lack of time and respect for the patient was experienced as a hindrance for participation.

Conclusions: Patient participation was related to factors both by the informers and the nurse. The patients could be challenged to be more active and have faith in their own knowledge. The nurses should listen more carefully to the patients. Both the patient and the nurse must change to become more equal partners.

Tab. 1 Patient participation during hospitalization: Contributions and hindrances

Main theme	Factors by the informer that contributes or hinders patient participation		Factors by the nurse that contributes or hinders patient participation	
	Contributes patient participation	Hinders patient participation	Contributes patient participation	Hinders patient participation
Sub themes	<ul style="list-style-type: none"> • Knows what they want and express it clearly • Took in own experience and knowledge 	<ul style="list-style-type: none"> • Breathing difficulties and lack of strength • Lack of knowledge and little faith in their own experiences 	<ul style="list-style-type: none"> • Giving care and respect • Giving time and being understanding • Are familiar with the patient 	<ul style="list-style-type: none"> • Lack of respect for the patient • Short staff nurses

058

Exercise training – nothing for me. An interview study in patients with chronic obstructive pulmonary disease.

Karin Wadell, Petronella Nordwall Strömberg, Annacrine Fjellman-Wiklund

Umeå University, UMEÅ, Sweden

The major symptoms in patients with chronic obstructive pulmonary disease (COPD) are dyspnea, decreased physical capacity and level of physical activity. Exercise training has been proven to decrease dyspnea, improve physical capacity and health related quality of life and is a recommended strategy in treatment guidelines. However, many patients decline participation in exercise training programs offered to them. There is scarce information in the literature about how patients with COPD experience the discussion about physical exercise as treatment method. The objective of this study was to explore thoughts and feelings when talking about exercise training as treatment in patients with COPD.

Six women and four men with moderate to severe COPD, naïve to exercise training as treatment, were interviewed. The data was analyzed using grounded theory.

The analysis resulted in one core category and four categories. For most of these participants exercise training was something

unknown. Exercise training was important but not for them. They had a perception that they could not perform exercise training or did not have the knowledge of what or how to perform it.

The patients express that physical exercise is important but an unknown territory for them. The results from these interviews are of great importance for health care professionals to take into account when informing patients with COPD about exercise training at treatment strategy. If the information about meaning and content of exercise training is changed there might be an increased amount of patients who understand that this effective treatment is valid also to them.

O59

The need of support to patients with lung cancer and their relatives

Maria Olin¹, Cecilia Arving²

¹Karolinska Institutet, Dept Medicine Solna, STOCKHOLM, Sweden

²Uppsala University, Department of Public Health and Caring Sciences, UPPSALA, Sverige

The incidence of lung cancer in Sweden is approximately 3500 individuals each year and 15 percent of these are under the age of 60. The majority of these patients are both active on the job market and have families with children living at home. The purpose of this study was to find out what kind of support these patients and their partners need.

A qualitative research design with semi-structured questions was used. Interviews were conducted with five patients and their partners, all of them having children aged 5–18 living in their households. The results were categorized into four groups: emotional, instrumental, informative and appraisal support.

Both the patients and their partners were satisfied with the medical information they had received. Practical assistance through advanced medical care at home (ASIH) was also seen as a great benefit. However, they expressed a need for more opportunities to talk with someone. In contrast to the patients, their partners felt that they had not been seen or confirmed by the hospital staff. There was also a concern about the needs of the children and a lack of knowledge as to how to address these needs. They requested personnel that had experience of working with children and their need of support.

In conclusion, the study shows that the partners are happy with the medical care that the patients receive, but they themselves experience a lack of support from the health care service. A lack of knowledge regarding the needs of the children is evident, and therefore an action plan regarding how to better handle these needs is necessary.

Session 17 – Pulmonary Arterial Hypertension

O60

Pulmonary Hypertension – Causes and Diagnosis

Göran Rådegran

Skånes Universitetssjukhus, LUND, Sweden

Pulmonary hypertension (PH) may according to the Dana Point Classification be due to; Group 1.) pulmonary arterial hypertension (PAH), Group 2.) left heart disease, Group 3.) lung diseases and/or hypoxia, Group 4.) chronic thrombo-embolic disease (CTEPH), or Group 5.) be due to unclear and/or multi-factorial mechanisms. PH is diagnosed by right heart catheterisation, and defined by exhibiting a mean pulmonary artery pressure ≥ 25 mmHg at rest. PH is further divided into pre-capillary or post-capillary PH. Pre-capillary PH exhibit a pulmonary capillary wedge pressure (PCWP) ≤ 15 mmHg at a normal or reduced cardiac output. Post-capillary PH exhibit a PCWP > 15 mmHg at a normal or reduced CO. Post-capillary PH is further sub-divided into passive or reactive (out of proportion) PH, depending on whether the trans-pulmonary gradient (TPG) is ≤ 12 mmHg or > 12 mmHg, respectively. Pre-capillary PH may be related to Group 1, 3, 4 or 5, whereas post-capillary PH is related to Group 2. Moreover, in specific, survival in untreated PAH patients has been found to be only ~ 2.8 years from diagnosis, and if related to systemic sclerosis as low as ~ 1 year. Thus, in order to improve survival and optimize future treatments in PAH, as well as in PH of other aetiology, an increased knowledge of the causes of the various types of PH, is urged for. This will be addressed in the present talk.

O62

Treatment of CTEPH. Is surgery the solution?

Søren Møllekjær

Aarhus University Hospital, AARHUS, Denmark

Chronic thromboembolic pulmonary hypertension (CTEPH) develops in up to 4% of patients after acute pulmonary embolism (PE). However, many patients that are diagnosed with CTEPH have not previously been hospitalized with clinical episodes of PE. For that reason, CTEPH should be considered in any patient with unexplained dyspnea with or without a history of PE. A diagnostic algorithm will be proposed. The value of lung ventilation-perfusion scan and lung CT-angiogram will be discussed. The disease can potentially be cured with pulmonary endarterectomy (PEA). The results of nearly 20 years of experience with PEA from Aarhus University Hospital, Denmark, will be presented. But which patients should be referred? And are there any alternatives to surgery?

Session 18 – Treatment guidelines on COPD

O63

Updated GOLD guidelines – Pro

Jørgen Vestbo

Odense University Hospital, ODENSE, Denmark

The current GOLD document is not a guideline as it is impossible to write a 'global guideline' – rather, it is a strategy document meant to inspire. And hopefully form the basis for, national and regional COPD guidelines.

The 2011 revision of the GOLD document and the 2013 update mainly contain changes in assessment and approach to management as well as 2 new chapters, one on exacerbations and one on comorbidities. The definition of the disease is only slightly modified and now mentions exacerbations. The diagnosis is still a clinical diagnosis (GOLD does not endorse screening) and the fixed ratio of $FEV_1/FVC < 0.7$ is maintained as criterion of airway obstruction for simplicity. The new document requires a spirometry for diagnosis instead of just recommending it.

Assessment of the COPD patient is split in assessment of symptoms, assessment of airflow limitation based on spirometry, assessment of risk of exacerbations, and assessment of comorbidities. The assessment of symptoms, airflow limitation and exacerbation history enable the clinician to classify the patient in 1 of 4 groups, groups A–D. This is neither a staging process, nor a prognostic classification; the grouping is meant as an aid to guiding subsequent management.

Smoking cessation is still seen as the most important objective of COPD management although other exposures should be reduced as well. Non-pharmacological parts of COPD management include physical activity and pulmonary rehabilitation. Pharmacological therapy should be guided by a combined assessment of symptoms and risk and is split in suggestions for initial therapy, other therapies, and alternative treatments. The document strongly encourages assessment of comorbidities and comments on treatments for comorbidities in the COPD patient.

O64

A case against GOLD

Peter Lange

University of Copenhagen and Respiratory Section, Hvidovre Hospital, COPENHAGEN, Denmark

The recent update of the GOLD document was launched in the end of 2011. The update follows the tradition of earlier versions and is a comprehensive document consisting of several chapters describing the diagnosis, initial assessment, treatment of stable disease and exacerbations. The document also focuses on the treatment of the most important COPD comorbidities.

The committee behind this document states that it should not be regarded as a guideline, but rather as an inspiration for creating local guidelines. Most of the statements in the document are

evidence-based. The new version abandoned the 'escalator approach', which implied addition of more medication with decreasing FEV_1 . Instead, the new version introduced a 'quadrant based' approach where the patients are grouped into four groups A–D. These groups are defined on the basis of three dimensions: spirometry, exacerbations and symptoms. Although all these dimensions are most relevant while assessing patients with COPD, the new A–D categorizing approach has been subject to much criticism. Firstly, the defining cut- of values: FEV_1 value of 50% of predicted, two or more exacerbations in the previous year and CAT score of 10 (or mMRC of 2) are not evidence based. Secondly, the correct placing of an individual patient into A–D groups is complicated as the most severe score of the lung function dimension and the exacerbation dimension overrules the less severe one, when deciding if the patient belongs to the high risk groups C / D or to the low risk groups A / B. Thirdly, the fact that different scenarios could be responsible for a patient belonging into high risk groups C/D call for a more differentiated medical treatment than the options suggested by GOLD. Additionally, the document does not provide suggestions on how to continue medical treatment once the exacerbations and symptoms have been controlled by either reduction of harmful exposures like smoking or by medical treatment.

In conclusion, although the GOLD document includes important information on how to assess and treat patients with COPD, the quadrant based approach creates confusion and should be modified in the future updates.

Session 19 – Interstitial lung diseases

O65

State of the art 30–40 min

Gisli Jenkins

University of Nottingham, NOTTINGHAM, United Kingdom

Idiopathic Pulmonary fibrosis (IPF) is a chronic progressive lung disease, with a prognosis worse than most cancers and without known cure. The incidence of IPF is increasing, although the causes of this increase are not known. However, some environmental and genetic associations have been determined and these will be discussed.

Although the aetiology of IPF remains unknown, the pathogenesis of the disease is rapidly emerging. IPF is thought to result from recurrent epithelial injury inducing the production and activation of growth factors that leads to the activation of fibroblasts and matrix synthesis which, in susceptible individuals, fails to stimulate repair but amplifies positive feedback loops and promotes the development of fibrosis. A key growth factor in this pathway in the pathogenesis of IPF is Transforming Growth Factor- β (TGF β), and molecules which interact with this pathway are likely to be crucial in developing novel strategies to inhibit the development of fibrosis. The key steps in this pathway and potential strategies to inhibit it will be described.

The last 10 years has seen a paradigm shift in IPF research

with an explosion of clinical trials, and trial data that has emerged in association with these trials. This has improved our understanding of the natural history of disease as well as identifying potentially useful therapies, and confirming that immunosuppressive therapies targeting inflammation are unhelpful, and possibly harmful. Key recent clinical trial data will be described, including the Capacity and Panther trials.

O66

Human bronchial basal epithelial cells as candidate EMT precursors in idiopathic pulmonary fibrosis

Þórarinn Guðjónsson

University of Iceland, REYKJAVIK, Iceland

Idiopathic pulmonary fibrosis (IPF) is a progressive lung disease with high morbidity and mortality. The cellular source of IPF is unknown but one suggested source is epithelial-to-mesenchymal transition (EMT). In this work we show that epithelium overlying fibrotic foci in IPF contains p63 positive basal cells but no ciliated or goblet cells. This basal epithelium has acquired increased expression of mesenchymal markers (N-cadherin, Vimentin) and increased CK14 while retaining E-cadherin expression. The underlying fibrotic foci showed both E- and N-cadherin positive cells. This pattern of expression led us to hypothesize that p63 positive basal cells could act as EMT precursors in IPF. In support of this we also demonstrate that VA10, a p63 positive basal epithelial cell line, acquires marked up-regulation of EMT markers when cultured in medium containing Ultrosor G (UG, serum supplement). Isolation of mesenchymal-like cells from the UG-treated VA10, based on depletion of EpCAM+ cells and positive selection of Thy-1+ cells shows that these cells have acquired major hallmarks of EMT with loss of epithelial markers (E-Cad, EpCAM, miR200c) and gain of mesenchymal markers (N-Cad, Vimentin, Thy1). Furthermore, they show increased migration and anchorage independent growth and resistance to apoptosis, all phenotypes associated with EMT. This study suggests that p63-positive basal cells could act as EMT progenitors in IPF.

O67

The Danish Registry for Interstitial Lung Diseases, purpose and perspectives

Charlotte Hyldgaard

Aarhus University Hospital, AARHUS C, Denmark

A national Danish Registry for interstitial lung diseases has been developed and will soon be ready to start inclusion.

All respiratory departments across the country are invited to participate. The registry is web-based and includes demographic and clinical characteristics as well as facilities for storage of HRCT scans.

The main ambitions for the registry are:

- To create a unique platform for epidemiological and clinical research in interstitial lung diseases.

- To facilitate the collaboration between respiratory departments involved in diagnosis and treatment of interstitial lung diseases in Denmark.
- To improve the awareness of interstitial lung diseases.
- To provide a platform for Danish contribution to Nordic and international co-operation.

O68

A national collaborative effort for the registration of idiopathic pulmonary fibrosis patient data in Finland

Marjukka Myllärniemi

University of Helsinki, HELSINKI, Finland

Background: Idiopathic pulmonary fibrosis (IPF) is the most common idiopathic lung parenchymal disorder, with median survival of 3–5 years (ATS/ERS statement 2011). The exact incidence and prevalence of IPF in Finland is unknown. This study was designed as a pilot study to collect epidemiological data on IPF in Finland.

Materials and methods: A collaborative network, the FinnishIPF consortium was formed from representatives (pulmonary physicians) from each university hospital (Helsinki, Turku, Tampere, Kuopio and Oulu). Ethical permission to obtain informed consent was received from the Helsinki University Central Hospital, and was approved by all other four University Hospitals. All university hospital databases were screened for the Dg number(s) J84.1, J84.9 during year 2012. Patient data was re-evaluated by a pulmonary physician and uploaded to an electronic web-browser-accessible registry database by a pulmonary physician or a trained research nurse.

Results: After the initial screening of patients from the search (J84.1, J84.9), approximately 40–50 patients from each hospital were identified as IPF patients. Informed consent has been obtained from 200 patients, out of which 125 patients data have been re-evaluated by a pulmonary physician and uploaded to the registry database. Analysis from the first 125 patients in the registry showed, that the mean age of diagnosis in the Finnish University hospitals was 68.5 years. The male-to-female ratio was 0.6. 25% of patients had undergone diagnostic thoracotomy in order to obtain the diagnosis of IPF. Mean FVC at diagnosis was 2,84 (78%), mean DLCO was 55 (volume-adjusted 78). Only five patients had diffusing capacity below 35.

Discussion: Our initial data obtained from five Finnish university hospitals suggest, that national collaborative efforts can yield high-quality epidemiological data on IPF. Our results suggest, that most IPF are diagnosed at mild-moderate stage in the Finnish university hospitals. Our future goal is to expand our research to local district hospitals, compare data from different geographical areas in Finland, and collect data on disease survival and the effects of treatment.

Session 20 – Nursing care for people with advanced lung diseases and their families

O69

Caring burden of home-dwellers with partners suffering from COPD or dementia in relation to aspects of social support

Bente Nordtug

Høgskolen i Nord-Trøndelag, LEVANGER, Norge

Methods: Cross-sectional study, (n= 206). Summary: The Relative Stress Scale measured caring burden and was found to be lower and change less with severity in the COPD group. In multiple regression analyses, characteristics of the ill partner such as aggressive behavior, degree of self-reliance, hours they could adequately be alone, in addition to public services, social support or withdrawal from family and friends, and gender of the caregiver, were overriding the type of illness. Different factors added to the caring burden of females and males, explaining 58 % of the caring burden for females, and 77 % for males.

Conclusions: In future management of health services it seems beneficial to emphasize these findings, and consider gender differences in the efforts to improve the caregivers' capacity for extensive caring in the homes

O70

The effects of real-time telemedicine consultations between hospital-based nurses and severe COPD patients discharged after exacerbation admissions

Anne Dichmann Sorknæs¹, Jest Peder¹, Mickael Bech², Lise Hounsgaard², Finn Olesen³, Birte Østergaard²

¹*OUH-Odense University Hospital & Svendborg Hospital, V. SKERNINGE, Denmark*

²*University of Southern Denmark, ODENSE, Denmark*

³*Aarhus University, AARHUS, Denmark*

Introduction: Hospitalisation with acute exacerbation of chronic obstructive pulmonary disease (AECOPD) causes a major burden for the COPD patients and is a common cause for admissions and readmissions to medical wards.

Objectives: To investigate the effect of one week of daily real-time telemedicine video consultations (teleconsultation) between hospital-based nurses specialised in respiratory diseases (telenurses) and patients with severe COPD discharged after AECOPD in addition to conventional treatment compared to the effect of conventional treatment.

Methods: Patients admitted with AECOPD at two different locations were recruited at hospital discharge and randomly assigned (1:1) to either daily teleconsultation for one week in addition to conventional treatment, the TVC group or to conventional treatment, the CT group. The telemedicine equipment

consisted of a briefcase with built-in computer including a web camera, microphone and measurement equipment.

Primary outcome: consisted of the total number of readmissions within 26 weeks after discharge.

Results: A total of 266 patients (mean age 71.5 years, SD 9.5 years) were allocated to either TVC (n=132) or CT (n=134). No significant difference was noted between the groups ($p = 0.62$).

Conclusion: In conclusion, addition of one week of teleconsultations between hospital-based telenurses and patients with severe COPD discharged after hospitalisation with AECOPD was as safe and effective as conventional treatment, but it did not significantly reduce readmissions or affect mortality.

O71

Chronic Obstructive Pulmonary Disease – test of physical activity level in a home setting

Lisbeth Marie Oestergaard, Christina Nielsen, Nina Skavlan Godtfredsen

Bispebjerg University Hospital, COPENHAGEN, Denmark

Background:

In connection with the "Online Chronic Obstructive Pulmonary Disease (COPD) Rehabilitation – a pilot study" the patients were tested in their own home before and after the study. In extension of the pilot study and with reference to the online study this year, test of physical activity level in a home setting are in focus. In a hospital setting different kinds of tests using space and special equipment can be performed. This kind of tests is not possible or strictly comparable with test in a home setting. Furthermore, patients with severe or very severe COPD may have challenges performing the same standardized test battery as in the hospital due to fatigue and shortness of breath.

Objective:

To evaluate and gain experience in testing the physical activity level of patients with severe or very severe COPD in a home setting

Methods:

In connection with "Online COPD rehabilitation 2012" the goal is to include 48 patients diagnosed with severe or very severe COPD through 2013. The patients are tested in their own home setting. In hospitalized rehabilitation patients are usually tested with Shuttle-walk-test (Incremental and Endurance) or 6-minute-walk, however this is not feasible in a home setting. Therefore other physical tests are performed; Timed-up-and go 2,45m performed twice, Sit-to-stand performed once and 2-minute knee-lift-test performed once.

Results:

Results from the patients who have completed study until now will be presented.

Conclusions:

The pilot study showed promising results. Conclusions based on results from the extended study period will be shown.

072

Family nursing practice for patients with lung diseases

Helga Jónsdóttir, Bryndís S. Halldórsdóttir, Þorbjörg Sóley Ingadóttir

University of Iceland, REYKJAVÍK, Iceland

Reorienting the focus of health systems to incorporate a multifaceted approach that allows for comprehensive and humane health care is pending. Using the participatory paradigm approach, we describe a study of a partnership-based family nursing practice for people with lung diseases. The results are presented with narrative analysis that reveal the meaning and experience of the family nursing practice in the following interlacing descriptive statements: (a) surfacing and contextualizing health problems, (b) responsiveness of services, (c) security-stability-self-direction, and (d) unified family efforts- transformation. We conclude that the conceptual framework of partnership is a useful approach to nursing practice within a nurse clinic for people with advanced breathing difficulties and their families. The results will be discussed from different angles in three consequent presentations: The theoretical framework, diversity of patient problems and working with families.

Session 21 – Sleep 2

073

New technological approaches to a major public health problem

Samuel Kuna

University of Pennsylvania, PHILADELPHIA, USA

Sleep medicine is strategically positioned to capitalize on the use of emerging telehealth technologies that are transforming healthcare to home-based delivery. Application of video teleconferencing, wireless transmission of data, and patient access to personal medical information promise to increase patient access to care, promote self-management, and be more cost effective than current in-person models of care delivery. Innovative telehealth programs at the Philadelphia Veterans Affairs Medical Center, Philadelphia, PA, USA have been developed to treat patients with chronic insomnia using cognitive behavioral treatment for insomnia delivered by video teleconferencing. An interactive website has also been developed that allows patients with obstructive sleep apnea to complete clinical outcome questionnaires, view the daily results of their positive airway pressure treatment, access educational videos and documents, and e-mail their sleep specialist. Use of these technologies allows patients to receive care of their sleep disorder without coming to the sleep center. Research studies are urgently needed to determine the most cost effective way to use these new telehealth technologies to diagnose and manage patients with sleep disorders.

074

Telemonitoring of CPAP therapy

Tarja Saaresranta

Turku University Hospital, TURKU, Finland

Telemonitoring has been successfully used to improve adherence for nasal CPAP therapy. However, the effect of telemonitoring on nursing time has not been reported. We compared telemonitoring with regular nursing procedure in terms of patient satisfaction, CPAP adherence and nursing time during the habituation phase of the CPAP therapy in OSAS. After CPAP titration at home, patients were randomized to the telemonitoring (TM) or the control group (CTRL). TM used S9 Elite® (ResMed, Australia) fixed pressure CPAP device with wireless, remote monitoring system (ResTraxx Online System®, ResMed, Sydney, Australia), and CTRL similar CPAP devices without telemonitoring. Both groups were encouraged to call the sleep nurse during the habituation phase, if running into problems with treatment. Both groups were satisfied with patient education and support. CPAP adherence was similar in both groups. After the habituation phase, TM considered less frequently control visit at doctor's office necessary than CTRL. Nursing time per patient was shorter in the telemonitored group than in the control group. According to our preliminary results, patients are satisfied with telemonitoring. Moreover, telemonitoring seems to save nursing resources during the habituation phase of the CPAP therapy.

POSTER SESSION 1

Home mechanical ventilation

P01

Evaluation of the laryngeal response patterns during mechanical insufflation-exsufflation

Tiina Andersen, Astrid Sandnes, Magnus Hilland, Thomas Halvorsen, Ove Fondenes, John-Helge Heimdal, Ole-Bjørn Tysnes, Tom Karlsen, Thor-Andre Ellingsen, Marit Arnevik Renså, Gunvor Mo Norstein, Ola Drange Røksund

Haukeland University Hospital, BERGEN, Norway

Objective: Mechanical insufflation-exsufflation (MI-E) is used to assist cough in patients with neuromuscular diseases. Clinically, MI-E may be challenging in patients with bulbar Amyotrophic Lateral Sclerosis (ALS), possibly related to laryngeal dysfunction. Laryngeal response patterns to MI-E have not been established. We aimed to investigate laryngeal response patterns to MI-E in healthy individuals and in patients with ALS.

Methods: Continuous videorecorded transnasal fiberoptic laryngoscopy was obtained in twenty healthy individuals and in eight patients with ALS (two non-bulbar and six bulbar) while performing MI-E using Cough Assist® (Respironics, USA) according to a standardized protocol applying pressures of ± 20 to ± 50 cmH₂O.

Results: Both the healthy and non-bulbar ALS subjects managed to coordinate their cough well with MI-E. However, some heterogeneity was observed in healthy subjects in relation to both laryngeal anatomy at rest and during the application of MI-E. In bulbar ALS, the heterogeneity was more pronounced, and the vocal fold response could not be observed in four of six patients during parts of the MI-E sequence, due to hypopharyngeal obstruction during exsufflation or/and severe adduction of aryepiglottic folds during insufflation. In one of the six bulbar ALS patients, pronounced hypopharyngeal obstruction and high standing epiglottis concealed the response of structures below.

Conclusion: The laryngeal response to MI-E in patients with bulbar ALS differed from that observed in healthy subjects and in patients with non-bulbar ALS, in that laryngeal structures adducted during insufflation as well as during exsufflation. This *adduction* severely compromised the size of the laryngeal inlet, potentially compromising airflow and the effect of MI-E.

P02

The characteristics of patients on home volume control ventilation in Iceland

Björg Eysteinsdóttir¹, Edda Gunnarsdóttir², Oddný Fjóra Lárusdóttir¹, Bryndís Halldórsdóttir², Þóra Guðmunda Gísladóttir¹, Kristbjörg Leósdóttir¹

¹Landsþítali, REYKJAVÍK, Island

²Landsþítali, REYKJAVÍK, Island

Introduction: In Mars 2013, out of population of 360.000 in Iceland, there were altogether 3427 people using a home ventilation, 3205 on continuous positive airway pressure (CPAP), 149 on bilevel PAP (BiPAP), 62 on adaptive servoventilation and 11 on home volume control ventilation (Elisée). The use of volume ventilation has increased substantially since 2006 when the first Elisée device arrived. *Elisée device are used for various diseases that patients have to use in home care 24hours/day.* Our aim is to describe this treatment in the well defined population of Iceland.

Methods: All the patients who started treatment on Elisée device from 2006 are included. The subjects were altogether 26 patients (19 males and 7 females). The data was taken from their medical records.

Results: This group of patients had various diseases: chronic obstructive pulmonary diseases (COPD), motor neuron disease (MND), Duchenne muscular dystrophy, spinal muscular atrophy (SMA), muscular dystrophy and chronic respiratory failure due to accidents. The group included children and adults. The youngest patient in the group was 13 months and the oldest was 80 years. Ten of them died, three went on BiPAP device after a period on Elisée, two went into palliative care and eleven continued to use the Elisée device. The patients were all living at home except for two of them that were planning to go home again.

Conclusions: This group included patients of all ages, from infants up to elderly people. The patients that did not use it 24 hours/day have stopped the treatment or gone back to simpler ventilator control.

P03

Is it possible to prevent tracheostomy related infections in patients with long-term mechanical ventilation (LTMV)?

Sølvi Margrethe Flaten¹, Heidi, Øksnes Markussen², Solfrid Indrekvam², Sissel Frostad Oftedal¹, Gunvor, Mo Norstein¹, Ove Fondenæs¹

¹National Centre of Excellence in Home Mechanical Ventilation - NCH, BERGEN, Norge

²Haukeland University Hospital, BERGEN, Norway

Background: This project was a result of a specialization program in respiratory nursing at Bergen University College, Norway. NCH receives frequent enquiries from health personnel and caregivers regarding hygiene concerning tracheostomy patient, cleaning of tracheostomy cannulas, inner cannula, tracheostoma and replacement interval.

Aims: To search and identify evidence-based practice procedures/protocol for cleaning of cannulas in patients outside the hospital.

Method: Literature study of existing research and literature related to cleaning procedures.

Search: Best Practice/Pub Med/Medline OvidSP/Ovid Nursing/ Cochrane Library/NKH/Swedex and Google.

Results: The majority of research papers found were related to surgical techniques/entering the cannula and procedures in relation to hospitalized patients.

Results:

Guidelines 9

Reviews 10

RCT/Crossover study 1

In-vitro microbiologic study 1

Systematic review 1

Experimental study 1

Review articles 6

Procedures from medical company 3

Two studies showed different outcome regarding bacteriology.

One study concluded that cleaning the tracheostomy inner cannula with detergent and water was sufficient to achieve decontamination. Another study showed that *P. aeruginosa* and *S. aureus* biofilms in pediatric tracheostomy tubes were not eradicated by standard cleaning methods.

There was no evidence on how long the patient can use the same cannula before replacement.

Conclusion: Little research is published on hygiene in tracheostomy patient with LTMV outside hospital. Only two studies with high evidence from controlled studies, however with conflicting results.

There is a general lack of information regarding the prevalence of tracheostomy related infections in LTMV.

Practical procedures and guidelines recommendations are mainly consensus based.

Obstructive lung disease

P04

Measurement of activities of daily living in COPD: a systematic review

Tania Janaudis-Ferreira, Beauchamp Marla, Robles Priscila, Goldstein Roger, Brooks Dina

West Park Healthcare Centre, TORONTO, Canada

Objectives: The objectives of this systematic review were to synthesize the literature on measures of activities of daily living (ADL) that have been used in individuals with chronic obstructive pulmonary disease (COPD) and provide an overview of the psychometric properties of the identified measures.

Methods: Studies that included a measure of ADL in individuals with COPD were identified using electronic and hand searches. Two investigators performed the literature search. One investigator reviewed the study title, abstract and full-text of the articles to determine study eligibility and performed the data extraction and tabulation. In case of uncertainty, a second reviewer was consulted.

Results: A total of 679 articles were identified. Of those, 116 met the inclusion criteria. Twenty-seven ADL instruments were identified, of which 11 instruments were respiratory disease-specific while 16 were generic. Most instruments combined Instrumental ADL (IADL) with Basic ADL (BADL). The majority of the instruments were self-reported; only 3 instruments were performance-based. Twenty-one studies assessed psychometric properties of 16 ADL instruments in patients with COPD.

Conclusions: Although several ADL instruments were identified, psychometric properties have only been reported in a few. Selection of the most appropriate measure should focus on the target construct (BADL or IADL or both), type of test (disease-specific vs. generic and self-reported vs. performance-based), depth of information obtained and psychometric properties of the instruments. Given the relevance of ADL to the lives of patients with COPD its assessment should be more frequently incorporated as a clinical outcome in their management.

P05

Prevalence and profile of patients with a diagnosis of COPD participating in non-pulmonary rehabilitation programs

Tania Janaudis-Ferreira¹, D'Souza Lorna², Goldstein Roger¹, Brooks Dina¹

¹West Park Healthcare Centre, TORONTO, Canada

²St John's Rehab Program, Sunnybrook Health Sciences Centre, TORONTO, Canada

Objectives: to determine the prevalence of patients with a primary or secondary diagnosis of COPD among individuals who completed a non-pulmonary rehabilitation program and to describe the clinico-epidemiological profile of these patients.

Methods: Retrospective electronic data review of 4694 patients who completed a non-pulmonary inpatient rehabilitation program at the St John's Rehab program of Sunnybrook Health Sciences Centre, Toronto, Canada between July 1st 2010 and July 1st, 2012. Sex, age, primary or secondary diagnosis of COPD, reason for admission, type of program completed, length of stay and functional independence measure (FIM) on admission and discharge were collected.

Results: Three hundred fifty-one patients (50.1% male and 49.9% female) were identified with a primary (6.3%) or secondary (93.7%) diagnosis of COPD. Mean (SD) age was 76 (10). The majority of the patients participated in the Musculoskeletal inpatient program (n= 143; 41%). Other types of programs were: Cardiac (n = 88; 25%); Complex Care (n = 49; 14%); Neurology (n = 26; 7%); Amputees (n = 21; 6%); Transplants (n = 9; 3%), Oncology (n = 8; 2%), Trauma (n = 3; 2%) and Burns (n = 1; 0.3%). The primary reason for admission for most of these patients was Cardiac (n= 69) followed by "Status Post Unilateral Hip Replacement" (n=40). The mean (SD) length of stay was 20 (13) days. The Mean (SD) of the FIM on admission and discharge was 91 (11) and 108 (9) respectively.

Conclusions: The prevalence of patients with COPD was 7.5%. COPD is a common comorbidity among patients admitted for musculoskeletal and cardiac rehabilitation. In order to optimize the management of patients with COPD enrolled in other rehabilitation programs, it may be worthwhile introducing COPD-specific interventions.

P06

Multiple symptoms and quality of life in people with Chronic Obstructive Pulmonary Disease (COPD)

Christine Råheim Borge¹, Astrid K. Wahl², Torbjørn Moum³

¹University of Oslo/ Health and Society and Lovisenberg Diaconal Hospital, OSLO, Norway

²University of Oslo/ Institute of Health and Society, OSLO, Norge

³University of Oslo/Institute of Basic Medical Sciences, OSLO, Norge

Background: There is a lack of investigation on how breathlessness in COPD may be associated with other symptoms such as depression, anxiety, fatigue, sleeping difficulties, and pain. Furthermore, pain is a symptom that may be under recognized in COPD in particular as it might be associated with low quality of life (QOL).

Aims: To investigate how multiple symptoms are associated with breathlessness and to explore the prevalence, intensity, and location of pain in COPD and how pain is associated with QOL.

Method: 154 patients with COPD participated in a cross-sectional study. They performed a pulmonary function test and responded to the Respiratory Quality of life scale, Brief Pain Inventory, The Hospital Anxiety and Depression Scale, Lee Fatigue Scale, General Sleep Disturbance Scale and Quality of Life Scale. Multiple regression analyses were performed controlling for socio-demographic and clinical variables.

Results: Two papers[1;2] have been published from this study showing that breathlessness is significantly associated ($p<0.01$)

with symptoms of depression, anxiety, fatigue, as well as with sleeping difficulties and pain. 72% of the patients indicated the location of pain on a body diagram. Pain interference and pain intensity showed a significant association with disease specific QOL ($p<0.001$).

Conclusion: There is a need to recognize the role and function of multiple symptoms associated with breathlessness in COPD. Such a focus might help patients with COPD gain a better QOL.

1 Borge CR, Wahl AK, Moum T: Association of breathlessness with multiple symptoms in chronic obstructive pulmonary disease. J Adv Nurs 2010;66:2688-2700.

2 Borge CR, Wahl AK, Moum T: Pain and quality of life with chronic obstructive pulmonary disease. Heart Lung 2011;40:e90-101.

P07

Hospital-based pulmonary rehabilitation in patients with COPD in Sweden – a national survey

Karin Wadell¹, Tania Janaudis-Ferreira², Mats Arne³, Karin Lisspers⁴, Björn Stållberg⁴, Margareta Emtner⁵

¹Umeå University, UMEÅ, Sweden

²Sunnybrook Research Institute, St John's Rehab Hospital, TORONTO, Canada

³Department of Neuroscience, Uppsala University, UPPSALA, Sverige

⁴Dept. Public Health and Caring Sciences, Family Med and Prev Med Uppsala Univers, UPPSALA, Sverige

⁵Department of Neuroscience and Medical Sciences, Uppsala University, UPPSALA, Sverige

Pulmonary rehabilitation (PR) is an evidence-based multidisciplinary intervention that leads to decreased dyspnea, improved physical capacity and quality of life in patients with chronic obstructive pulmonary disease, COPD. PR is cost effective and is recommended in treatment guidelines for these patients. However, the availability of PR programs varies between and within different countries. The aim of this study was to investigate the availability and content of hospital-based PR programs in patients with COPD in Sweden.

A cross-sectional descriptive design was applied using a web-based questionnaire which was sent out to all hospitals in Sweden. The questionnaire consisted of 32 questions that concerned availability and content of PR in patients with COPD during 2011.

Seventy-one out of 72 hospitals responded the electronic survey. Forty-seven (66%) hospitals offered PR for patients with COPD. Around 75% of the hospitals in southern and middle parts of Sweden and 33% of the hospitals in the northern part offered PR. Forty percent of the patients declined participation. A total number of 1355 patients participated in PR which represents 0.3% of the COPD population in Sweden. All hospitals had exercise training as major component and 25% offered an educational program.

Not even half a percent of the patients with COPD in Sweden took part in a hospital based PR program during 2011. There was a considerable geographic discrepancy in availability over the country. To enable a greater part of the increasing number of patients with COPD to take part in this evidence-based treatment, there is a need of evaluating other settings of PR programs; in primary care, at home and/or over the internet.

Genetic variant of the nicotinic receptor gene and the long term prognosis of smokers

Henna Kupiainen¹, Mikko Kuokkanen², Jukka Kontto², Jarmo Virtamo², Veikko Salomaa², Ingeleif Jonsdottir³, Tarja Laitinen¹

¹University of Turku, TURKU, Finland

²National Institute for Health and Welfare, HELSINKI, Finland

³DeCode Genetics, REYKJAVIK, Iceland

Study objective Polymorphisms in the nicotinic acetylcholine receptor gene (CHRNA3/A5 locus) has been associated with several smoking related traits such as nicotine dependence, cigarette consumption, smoking cessation, lung cancer and the development of COPD. Our aim was to study one of the polymorphisms (rs1051730) in long term prognosis among smokers.

Subjects and methods: Genotyping was done in two longitudinal cohorts: Finnish COPD patients (N=575, 74% men) among which several clinical variables are available and among smoking men (N=1911) to whom only basic demographic information was available. The analyses were done using multivariate logistic regression model and Cox proportional hazards model. Additive model was used in all analyses and OR and HR values are given for minor homozygote. Finnish Health2000 population cohort (N=1728) was used for control.

Results: The genetic variant increased the risk of COPD when compared to the Finnish population at large (OR=1.4, $p=3.2 \times 10^{-5}$). Among COPD patients the minor allele was associated with cancer (adjusted OR 2.39 CI 1.00-5.67), in smoking men with pack years (adjusted OR 1.43 CI 1.09-1.96) and in both cohorts with all-cause mortality. Adjusted hazards ratios in COPD patients and in smoking men were HR 2.24, CI 1.22-3.82 and HR 1.23, CI 1.09-1.50, respectively.

Conclusions: Genetic variance found in the chromosome 15q25 locus may have clinical value in predicting high risk patients.

P09

Impaired carbon monoxide diffusion capacity is the strongest predictor of the decline in exercise capacity in chronic obstructive pulmonary disease

Amir Farkhooy¹, Christer Janson², Harpa Arnardottir³, Margareta Emtner², Andrei Malinowski², Hans Hedenström²

¹Uppsala University, UPPSALA, Sweden

²Dept. Medical Sciences, Uppsala University, UPPSALA, Sverige

³Dept. of Rehabilitation, Akureyri Hospital, AKUREYRI, Island

Objective: To evaluate the relationship between exercise capacity, assessed by standardized 12 minute walking test (12MWT), and various lung function parameters obtained by spirometry, body plethysmography and diffusion capacity (DLCO) measurements in patients with chronic obstructive pulmonary disease (COPD).

Methods: A total of 34 patients (22 women) with moderate to very severe COPD, aged 63 ± 8 years (mean \pm SD) were investigated regarding lung function (spirometry, lung volumes

and DLCO) and exercise capacity (12MWT) at baseline and follow-up, 5 years later. The subjects were part of a cohort of 86 patients consecutively recruited when being referred for physical training to the Dept. of Respiratory medicine at Uppsala university hospital.

Results: Patients were characterized at baseline by FEV₁ of 1.2 ± 0.4 L ($41 \pm 13\%$ predicted), RV of 3.4 ± 1.0 L ($187 \pm 58\%$ predicted) and DLCO of 3.8 ± 1.2 mmol/min/kPa ($51 \pm 16\%$ predicted). A decrease of 12MWD was found between baseline and follow-up (927 ± 193 m vs. 789 ± 273 m, $p<0.001$). DLCO and 12MWD at baseline were the only independent predictors of 12MWD at follow-up in a multiple logistic regression model that also included all other lung function parameters, gender, age and BMI. Furthermore DLCO value at baseline showed to be the highest predictor of loss in 12MWD after 5 years ($R^2=0.18$, $p=0.009$). These results were also consistent in a multiple logistic regression model that included all other lung function parameters, gender, age and BMI.

Conclusions: In a 5 year longitudinal study, DLCO measurements at baseline were the most important predictors of declining exercise capacity in COPD patients. These results suggest that integration of DLCO in the clinical work up provides a more comprehensive assessment in patients with COPD.

P10

Systemic inflammation and cardiovascular disease in chronic obstructive pulmonary disease (COPD)

Ólöf Birna Margrétardóttir¹, Thor Aspelund², Vilmundur Guðnason³, Gunnar Guðmundsson⁴

¹Faculty of Medicine, University of Iceland, REYKJAVÍK, Iceland

²Icelandic Heart Association, KÓPAVOGUR, Iceland

³Faculty of Medicine, University of Iceland, Icelandic Heart Association, KÓPAVOGUR, Iceland

⁴Department of Respiratory Medicine and Sleep, Landspítali University Hospital, REYKJAVÍK, Iceland

Background: Chronic obstructive pulmonary disease (COPD) has significant morbidity and mortality. Cardiovascular diseases are a common cause of mortality and systemic inflammation has been found in COPD.

Objective: To evaluate systemic inflammation and to measure signs of cardiovascular disease with non-invasive laboratory studies in the study population.

Methods: Subjects with COPD were identified among subjects in the Age Gene/Environment Susceptibility (AGES) study. Study population was divided into four groups; non-smokers with normal spirometry (NS-NS, control group), smokers with normal spirometry (S-NS), non-smokers with abnormal spirometry (NS-AS) and smokers with abnormal spirometry (S-AS). Inflammatory markers (C-reactive protein (CRP), interleukin-6 (IL-6), white blood cells (WBC)) were measured. Arterial macrovascular and microvascular disease was evaluated.

Results: S-AS group had the highest values of CRP and WBC. This finding was significant after adjustment for age, gender and body mass index (BMI). S-AS group had the most calcium in the coronary arteries and aorta. This was significant after adjustment for age, gender and history of cardiac event. Measurements of

carotid intima-media thickness and plaque showed similar results that were significant after adjustment for age, gender and statin use. There was a significant difference in periventricular white matter lesions (PVscore). Other measurements of brain vasculature (signs of microbleeds and infarcts) were non-significant.

Conclusion: Smokers with COPD had more inflammation. Vascular changes were seen in thorax but not in the brain, suggesting that COPD has the most effect on the vascular system in vicinity of the lungs.

P11

How to improve the care of COPD- and Asthmapatients in Sweden

Alf Tunsäter¹, Birgitta Jagorstrand¹, Kerstin Romberg¹, Leif Bjermer¹, Ann Ekberg-Jansson²

¹Allergy Competence Center, LUND, Sweden

²Angered's Narsjukhus, GÖTEBORG, Sweden

Background: A tool for quality monitoring is the use of indicators. So far there have been no quality tools that provide opportunities to develop the quality of care in terms of respiratory diseases in Sweden.

Aims: To build a National Quality Registry for COPD and Asthma in order to improve the quality of asthma and COPD care and to ensure equal treatment in all parts of Sweden.

Methods: A steering committee was appointed to select important indicators of quality. The committee was composed of specialists in general medical practice, allergologists, pulmonologists, paediatricians, asthma nurses and representatives of patient organizations.

Results: The registry was designed to fit the Health Care Centres in primary care, although the COPD part of the registry also has a hospital version. It contains personal information about diagnosis, treatment, and outcomes. When entering the registry you can choose between Asthma and COPD. You will only see and answer questions relevant for the certain disease. Many questions relates to both diagnosis such as spirometry data and smoking habits. Examples of registrations are: Time of diagnosis, smoking habits, lung function, basic allergy screening, health care consumption such as emergency visits and hospital treatments, patient reported outcomes and treatment.

Conclusions: The Swedish Association of Local Authorities and Regions (SALAR) now supports the results of the steering committee's work - "The Airway Registry". The feedback from the registry to the health care units will be of utter importance and enable development of the quality of care of patients with asthma and/or COPD in Sweden. It will also provide unique opportunities for research. An official report of registry summaries will be presented every year.

P12

Bronchial hyperresponsiveness to methacholine in relation to asthma control in children and adults – results from the MIDAS study

Andrei Malinovschi, Christer Janson, Lennart Nordvall, Hans Hedenström, Kjell Alving

Uppsala University, UPPSALA, Sverige

Bronchial hyperresponsiveness (BHR) is a hallmark of asthma. BHR to methacholine is used for diagnosis, but the role in monitoring treated asthma is not established. In the present study we assessed the relation between BHR to methacholine, airways inflammation, asthma control and symptoms.

Methacholine challenge and exhaled nitric oxide (FeNO) measurements were done in 371 asthmatics (aged 10-35 years) with inhaled corticosteroids prescribed. PD₂₀ <0.3 mg defined moderate-severe BHR, 0.3 to 1.0 mg borderline-mild BHR, and >1.0 mg normal response (Schulze et al. Resp Med 2009). Well-controlled asthma (≥20 in Asthma Control Test) was found in 68% of children (<18 years) and 75% of adults (≥18 years). All subjects answered questions on asthma symptoms.

Moderate-severe BHR was found in 61% of children and 44% of adults. FeNO increased with more severe BHR in both children and adults, with a higher explanatory value in children (R²=0.15 vs 0.06). Well-controlled asthma was less prevalent in the moderate-severe BHR group than the other two BHR groups in adults (66% vs 83% and 82%, p<0.05), whereas no significant difference was found in children (68% vs 76% vs 63%). Higher prevalence of wheezing and asthma attack last year was found with higher BHR in both children and adults (p<0.05 both). Dyspnea at rest related to BHR in children (p=0.007), while exercise-induced dyspnea was associated with BHR in adults (p=0.007).

In conclusion, bronchial hyperresponsiveness to methacholine was common in this treated asthma population and related both to airways inflammation and clinical aspects of asthma. BHR appears to be stronger related to poorer asthma control and exercise-induced dyspnea in adults than children.

P13

Altered fibroblast repair function in COPD

Oskar Hallgren¹, Sara Rolandsson¹, Annika Andersson-Sjöland¹, Elisabet Wieslander², Magnus Dahlbäck², Leif Eriksson², Jonas Erjefält¹, Claes-Göran Löfdahl¹, Leif Bjermer¹, Gunilla Westergren-Thorsson¹

¹Lund University, LUND, Sweden

²AstraZeneca, LUND, Sweden

During wound healing processes fibroblasts accounts for wound closure by adopting a contractile phenotype and produce extracellular matrix (ECM) molecules. During normal wound healing the process is terminated when the wound has healed and the initial trigger disappears. However when the trigger persists, as is the case in COPD with the repeated exposure of cigarette smoke, the wound healing process becomes pathological and the fibroblast phenotype is likely to be altered. Our aim was to investigate the repair capability, defined as ECM production and

contractility, in centrally (bronchial) and distally (alveolar) derived fibroblasts from severe COPD patients and control subjects.

The repair functions were different in centrally and distally derived fibroblasts from COPD patients compared to the corresponding cells from control subjects. Distally derived fibroblasts from COPD patients were more contractile and this was dependent on increased ROCK1 activity. In addition, these cells had enhanced production of the proteoglycan versican. Versican have been suggested to interfere with *de novo* synthesis of elastin and may thus be important in formation of emphysema. Centrally derived fibroblasts from COPD patients had a lower basal production of the basement membrane-stabilizing proteoglycan perlecan which may indicate alterations of the bronchial basement membrane in COPD. To summarize, our results suggest that fibroblasts from COPD patients have altered repair functions. Importantly, there was a difference in function between bronchial and alveolar fibroblasts which may reflect the different pathological processes in these sites.

P14

Bronchial hyperresponsiveness with histamine associates with incidence of asthma in a general adult population sample

Maria Juusela¹, Paula Pallasaho²

¹HUS Medical Imaging Center, HELSINKI, Finland

²Control of Hypersensitivity diseases, Finnish Institute of Occupational Health, HELSINKI, Finland

Bronchial hyperresponsiveness (BHR) was assessed as a risk factor for incidence of asthma.

In Helsinki, 6062 subjects took part in a postal survey of respiratory and allergic symptoms and diseases in 1996, of whom 292 participated in the bronchial challenge studies in 2001-2003. Later, 4302 subjects of those original 6062 subjects were participating in a follow-up postal survey in 2007.

In 1996 and 2007, a self-administered postal questionnaire was used. The same survey has been used in the FinEsS studies in Sweden in Norrbotten, Örebro, Stockholm and recently in Gothenburg, in Estonia in Tallinn, Narva and Saaremaa, and in Finland in Lapland and Helsinki.

The histamine test was performed for 292 randomly selected subjects according to the dosimetric, tidal breathing method by Sovijärvi *et al.* (1993). Histamine PD₁₅FEV₁ was defined. Multiple logistic regression analysis was used to assess the risk factors for incidence of asthma.

Results: In 1996-2007, a 4.0% cumulative incidence of asthma was found during the 11 years' follow up. After the time of the clinical examinations and the BHR testing, 10 incident cases of physician diagnosed asthma occurred. Eight subjects were women, and eight were ever smokers (range of pack years 7-43, mean 15). The number of symptomatic individuals with severe or moderate BHR was 8 (3.4%), which yielded an 18.34 folded risk for incident asthma (CI95%3.64-92.43).

In a multivariate model, symptomatic BHR independently increased the risk for incidence of asthma (OR 6.16 for PD₁₅FEV₁ ≤ 1.6 mg and OR 13.85 for PD₁₅FEV₁ ≤ 0.4 mg), as did family history of asthma (OR 15.99; OR 30.36), pack years ≥10 (OR 9.60;

OR 16.07), use of allergy medication (OR 11.93; OR 17.49).

Conclusions: Symptomatic BHR independently increases the risk for incidence of asthma already during a 4-6 year's follow up in the general adult population in Helsinki, Finland.

P15

Respiratory function and chemical exposures among female hairdressers in Palestine

Maysaa Nemer¹, Petter Kristensen¹, Khaldoun Nijem², Mayes Kasem³, Liv IB Sikkeland⁴, Johny Kogerud⁴, Espen Bjertness¹, Marit Skogstad³

¹University of Oslo, OSLO, Norge

²Hebron University, HEBRON, -----

³National Institute of Occupational Health, OSLO, Norge

⁴Oslo University Hospital, OSLO, Norge

Aims: To characterize respiratory symptoms, lung function, asthma and knowledge of exposure to hazards among female Palestinian hairdressers. The study is a longitudinal study including a subset study of induced sputum among 30 hairdressers and 30 control subjects. A group of university students and staff serve as a control group.

Methods: The cross-sectional study included 170 female hairdressers in 56 salons, and 170 control subjects. A sub group of the participants was selected with a total of 60. This group performed several examinations related to respiratory function, symptoms and asthma, including eNO, induced sputum, lung function and blood examination. Exposure to ammonia was measured in the salons where the participating hairdressers were working. The entire group will be subjected to follow-up after 5 years.

Results: Nineteen per cent of the hairdressers reported wheezing versus 11% in the control group. Adjusting for age and height, there was a forced expiratory volume in 1 second reduction of 0.093 (95% confidence interval = 0.06-0.15) comparing hairdressers with controls. A small number of hairdressers used respiratory protective equipment, and satisfactory ventilation in salons were lacking (1).

Selected results from the subset study will be presented at the conference.

Conclusions: Female hairdressers had higher prevalence of reported asthma and respiratory symptoms than the controls. They had lower lung function measurements than the control group. Increasing the awareness of occupational health hazards and improving the work conditions for the hairdressers in Palestine is needed.

1) Nemer M, Kristensen P, Nijem K, Bjertness E, Skogstad M. Respiratory function and chemical exposures among female hairdressers in Palestine. *Occup Med (Lond)* (2013) 63 (1): 73-76.

Managing Asthma in the Outpatient Clinic – Athletes with exercise-induced asthma

Asger Sverrild, C Porsbjerg, L Steensen, B Nybo, V Backer
University Hospital Bispebjerg, University of Copenhagen, 2400, Denmark

Background: In most cases of exercise-induced asthma in athletes an objective measurement of disease is often required as part of a Therapeutic Use Exemption application. An objective diagnosis often demands multiple testing with bronchial provocations and lung function measurements. Currently no guidelines exist on a diagnostic strategy in this group of subjects.

Aim: To evaluate the use of diagnostic tests in newly referred athletes with possible exercise-induced asthma in a specialized outpatient clinic.

Methods: Medical records on all patients with a suspected diagnosis of asthma referred to the outpatient clinic at Bispebjerg Hospital, Copenhagen, Denmark in 2010 were reviewed, and data on reversibility to beta2-agonist and airway hyperresponsiveness (AHR) to inhaled mannitol, methacholine and eucapnic hyperventilation was collected. Subjects with exercise-induced symptoms that reported to spend at least 10 hours a week on their sports were defined as athletes and were included in the analysis.

Results: Of 361 subjects referred with possible asthma to the outpatient clinic, 102 (22%) were categorized as athletes with possible exercise-induced asthma. Seventy-two subjects were diagnosed with asthma of whom 96% had at least one diagnostic test performed, and 78% ended up with an objectively confirmed diagnosis of asthma. A total of 57 subjects (79.2%) had more than one test as part of the diagnostic process.

Conclusion: Of athletes with exercise-induced asthma referred to an outpatient clinic, eight out of ten had their diagnosis objectively confirmed. In 79% of the subjects, two or more test for AHR or reversibility was necessary as part of the diagnostic process.

Genetic factors account for most of the variation in serum tryptase in humans – a twin study

Asger Sverrild¹, S Van der Sluis², K.O. Kyvik³, L.H. Garvey⁴, C Porsbjerg¹, V Backer¹, S.F. Thomsen⁵

¹University Hospital Bispebjerg, University of Copenhagen, 2400, Denmark

²Vrije Universiteit, Dep. of Functional Genomics & Dept of Clinical Genetics, AMSTERDAM, Netherlands

³University of Southern Denmark, Institute of Regional Health Services Research, ODENSE, Denmark

⁴Copenhagen University Hospital, Gentofte, Danish Anaesthesia Allergy Centre, COPENHAGEN, Denmark

⁵Copenhagen University Hospital, Gentofte, Dep. of Dermato-Allergology, COPENHAGEN, Denmark

Background: Mast cells are involved in a variety of diseases including inflammatory diseases like asthma. Tryptase is a known

marker of both mast cell burden and activity. However, little is known about the genetic influence on serum tryptase variation. Also, only few and conflicting data exist on serum tryptase in asthma. We aimed to estimate the overall contribution of genetic and environmental factors to the variation in serum tryptase, and to examine the correlation between serum tryptase and asthma, rhinitis, markers of allergy, airway inflammation and airway hyperresponsiveness (AHR) in a sample of Danish twins.

Methods: A total of 575 twins underwent lung function tests and had AHR to methacholine, exhaled nitric oxide, skin prick tests and serum tryptase performed. Multiple regression and a variance components model, using the statistical package SOLAR, was computed.

Results: Serum tryptase values were available in 569 subjects. The intra-class correlation in serum tryptase in monozygotic and dizygotic twin pairs was 0.84 and 0.42, $p < 0.001$. Variance decomposition showed that genetic factors accounted for 82% (CI95%: 74-90; $p < 0.001$) of the variation in serum tryptase. Body Mass Index and sex, but not asthma, rhinitis or AHR were correlated to serum tryptase.

Conclusions: As much as 82% of the variation in serum tryptase is due to genetic factors. Body mass index and sex, but not asthma or AHR to methacholine, correlate to serum tryptase. A genetic overlap may exist between serum tryptase and body mass index.

Asthma severity and diagnostic assessment in older asthma in a 12-months cohort of patients referred for specialist asthma assessment.

Celeste Porsbjerg, Asger Sverrild, Vibeke Backer
Bispebjerg Hospital, COPENHAGEN, Denmark

Background: Patients with late onset asthma represent a greater challenge to the respiratory specialist. However, limited evidence is available on how patients with late onset asthma are generally diagnosed and managed in tertiary care.

Aim: To compare the level of diagnostic assessment in older versus younger adults with suspected asthma in a representative cohort of asthma patients.

Methods: A retrospective study of all patients referred for tertiary specialist assessment on suspicion of asthma over a 12-month. Data on symptoms, history of asthma, lung function, NO and allergic sensitisation were assessed.

Results: Over the 12 months period, 283 patients with either a suspicion of, or known asthma, were referred. The mean age was 37.6 years (SD 16.7 years), of whom 157 (56%) were aged < 40 years, and 126 (44%) > 40 years.

Compared to young adults aged under 40, subjects aged > 40 years reported more frequent exacerbations (25% vs 13%, $p < 0.003$), more courses of prednisolone (11% vs 6%, $p = 0.02$), as well as courses of antibiotics (31% vs 24%, $p = 0.007$) over the past 12 months.

Furthermore, the level of lung function was significantly lower among subjects > 40 years (FEV1 % of predicted: 81.3% (SD:22.4) vs 94.4% (SD:17.3%), although the level of eNO was similar (26 ppb vs 28 ppb).

In spite of the severity of asthma in the older group, the level

of diagnostic assessment was lower in older subjects: Symptom frequency was assessed in 16% vs 27%, ($p=0.02$), reversibility testing was performed in 44% vs 58% ($p=0.01$), NO measurement in 49% vs 77% ($p<0.001$) and bronchial provocation (mannitol and/or metacholine) in 36% vs 60% ($p<0.001$).

Conclusion: Among adults referred for specialist assessment on suspicion of asthma, the severity of asthma increased with age, but the level of diagnostic assessment decreased, indicating that lack of asthma control in older adults may partially relate to insufficient diagnostic assessment.

P19

The effect of smoking cessation on airway inflammation in young asthma patients

Christian Grabow Westergaard, Celeste Porsbjerg, Vibeke Backer
Bispebjerg Hospital, Respiratory Research Unit, COPENHAGEN NV, Denmark

Objective: Asthma patients who smoke experience more pronounced symptoms as well as steroid treatment resistance. This may relate to smoking-induced changes in airway inflammation in terms of increased neutrophilia and reduced eosinophilia. Whether these inflammatory changes are reversible is unknown. In the present study, we hypothesized that in young asthma patients, airway neutrophilia would be reduced and eosinophilia would increase after five weeks of smoking cessation. Thus, the aim of the present study was to evaluate the short-term effect of smoking cessation on airway inflammation in young asthma patients.

Methods: 45 steroid-free asthmatic smokers (age 19-40) were examined with induced sputum and exhaled nitric oxide (eNO) one week before and five weeks after smoking cessation. Mean number of packyears was 15.6 (range 10-25).

Results: 25 patients quit smoking successfully. A difference in change in sputum neutrophil-% was observed between quitters and non-quitters (-7% versus +5%, respectively, $p=0.063$). The median D-eosinophil-% was similar between both groups at 0.0% and -0.5%, respectively ($p=0.493$). The median D-eNO were +4.0 ppb and +2.0 ppb, respectively ($p=0.263$).

Conclusion: The data of the present study suggests that smoking-induced neutrophilia in the asthmatic airways are of reversible character even over a short-term period of smoking cessation. This beneficial effect of smoking cessation may contribute to increasing the motivation of asthma patients to quit smoking. However, future studies including higher sample sizes and a longer smoking cessation period are required.

P20

Comorbidity between chronic obstructive pulmonary disease and type 2 diabetes in adult twins

Howraman Meteran¹, Vibeke Backer¹, Kirsten Ohm Kyvik², Axel Skytthe³, Simon Francis Thomsen¹

¹*Respiratory Research Unit, Bispebjerg Hospital, COPENHAGEN NV, Denmark*

²*Institute of Regional Health Services Research & Odense Patient data Explorative, ODENSE, Denmark*

³*The Danish Twin Registry, ODENSE, Denmark*

Aim: To examine the relationship between chronic bronchitis and chronic obstructive pulmonary disease (COPD), and type 2 diabetes in adult twins.

Methods: Questionnaire data on chronic bronchitis and hospital data on diagnosed COPD on 13,649 twins, 50-71 years of age, from the Danish Twin Registry, were cross-linked with hospital discharge diagnosis data on type 2 diabetes from the Danish National Patient Registry.

Results: The risk of type 2 diabetes was higher in subjects with symptoms of chronic bronchitis compared with subjects without symptoms of chronic bronchitis (3.5 vs. 2.3%), OR=1.46 (1.03-2.07), $p=0.035$; and in subjects with diagnosed COPD compared with subjects without diagnosed COPD (6.6 vs. 2.3%), OR=2.50 (1.58-3.97), $p=0.000$. The results were significant after adjusting for age, sex, smoking and Body Mass Index (BMI). Correlations between genetic effects on chronic bronchitis and type 2 diabetes; and between genetic effects on diagnosed COPD and type 2 diabetes, respectively, were 0.25 (0.00-0.59), $p=0.130$ and 0.35 (0.00-0.72), $p=0.134$.

Conclusions: Patients with chronic bronchitis and COPD have an increased risk of type 2 diabetes independently of sex, age, smoking and BMI. Furthermore, comorbidity between these diseases seemed not to be explained by shared genetic factors. The increased risk of type 2 diabetes must be accommodated in the management of patients with chronic bronchitis and COPD.

Respiratory movements among patients with severe COPD and emphysema in the supine and standing forward leaning position with support of the forarms

Asdis Kristjansdottir¹, Magdalena Asgeirsdottir¹, Hans Beck¹, Petur Hannesson², Maria Ragnarsdottir²

¹Reykjalundur, MOSFELLSBAER, Iceland

²Landspítali National and University Hospital Reykjavik, REYKJAVIK, Iceland

Background: Forward leaning position is frequently used to reduce dyspnea but thoracic respiratory movements in this position are not known.

Objective: To study respiratory movements in supine and standing leaning forward position with support of the forarms among patients with emphysema and severe COPD. Furthermore to study respiratory movements in the forward leaning position during dyspnea.

Method: Nineteen patients with emphysema and severe COPD GOLD 3 and 4 underwent spirometric measurement and position of their diaphragm was assessed. Respiratory movements during quiet and deep breathing were measured in supine and standing forward leaning position using the RMMI (MTT, Keldnaholt, 112 Reykjavik, ICELAND). Patients then bicycled with the work rate target set as fixed fractions of the peak work rate tolerated in a pre-program incremental exercise test. When dismounting the bicycle, respiratory movements were measured in the forward leaning position. Patients rated their level of dyspnoea at rest and after bicycling.

Results: Participants were 8 men and 11 women mean age 61 ± 7 years and mean BMI 23.59 ± 4.63 . Respiratory movements during quiet breathing in supine position were significantly (abdominal $p = .025$, lower- and upper thoracic $p = .020$) greater than in the forward leaning position. In forward leaning during dyspnea, lower- and upper thoracic movements were significantly ($p = .001$; $p = .005$, respectively) less than abdominal movements. Mean dyspnea on 0-10 scale was 0.95 ± 1.13 at rest and 5.5 ± 0.96 at the end of bicycling.

Conclusion: Respiratory movements in the forward leaning position are less than in supine. Indicating that patients with emphysema and severe COPD use this position to reduce respiratory effort.

Pulmonary care

Online Chronic Obstructive Pulmonary Disease Rehabilitation – a pilot study

Lisbeth Marie Oestergaard, Christina Nielsen, Nina Skavlan Godtfredsen

Bispebjerg University Hospital, COPENHAGEN, Denmark

Background: Widespread evidence exists in favor of exercise training for patients with severe or very severe chronic obstructive pulmonary disease (COPD). Some of these patients decline the offer to attend the hospitalized rehabilitation program due to fatigue, severe shortness of breath, transportation time and so forth. Due to developments in video conference technology it is possible for these patients to receive online rehabilitation in their home.

Objective: To improve COPD patients' quality of life and increase their physical activity level.

Methods: 11 patients diagnosed with COPD - 7 of these with very severe COPD - participated in a pilot study in 2012. They received online rehabilitation using video conference technology allowing the patients to see and communicate with the instructor and with each other. 4 patients were online at the same time, twice a week for 1 hour, during a period of 7 weeks. They received exercise training and education. Patient evaluation included health-related quality of life (CAT, 15D), physical tests (timed-up-and go 2,45m (2,45m) and sit-to-stand (STS)) performed in the patient's home.

Results: All 11 patients completed the course. Overall attendance rate was 95 % and any absence was due to sickness or holiday. 7 patients experienced improvement in quality of life (CAT), 9 patients improved their time on the 2,45m test, 6 patients increased number of STS.

Conclusions: Online rehabilitation can be useful for patients, with severe or very severe COPD, who are unable to attend hospitalized rehabilitation. However, further research is needed to evaluate the clinical outcomes and cost-effectiveness of this program, which will be continuing with new patients in 2013.

Effects of high-repetitive single limb exercises on isokinetic local muscle endurance capacity and maximal strength during shoulder flexion and knee extension in patients with COPD

Andre Nyberg, Britta Lindström, Karin Wadell

Umeå University, UMEÅ, Sweden

Forty-four patients with chronic obstructive pulmonary disease (COPD) [21 male; mean (SD) age; $68.7 (5.6)$ years, FEV% predicted; $44.6 (9.7)$ BMI; $25.6 (4.4)$] were recruited and randomized to either high-repetitive single limb exercises (HRSLE) in combination with patient education (PE) or PE alone. Blinded measurements of

muscle function were performed at baseline and after 8 weeks on a stationary dynamometer. Isokinetic peak torque (Nm) and the total work (joules) of 30 consecutive repetitions at an angular velocity of 60° per s was used for maximal strength and local muscle endurance respectively. HRSLE is a strength training regimen performed with one leg /arm at a time alternating the left/right side using elastic bands and body weight as resistance.

The magnitude of change was greater in the HRSLE group on all isokinetic outcome measures. Local muscle endurance during shoulder flexion (mean difference 70 joules, 95% CI 29 to 112 joules, $p=.002$) and during knee extension (mean difference 235 joules, 95% CI 77 to 386 joules, $p=.002$). Maximal strength during shoulder flexion (mean difference 3,7Nm, 95% CI -0,4 to 7,8 Nm, $p=.029$) and during knee extension (mean difference 7,7Nm, 95% CI 0,3 to 15,1 Nm, $p=.042$) Log transformed p-values are presented for variables not normally distributed.

The present study shows that 8 weeks of HRSLE improves isokinetic maximal strength and local muscle endurance capacity in patients with moderate to severe COPD.

P24

Excellence of preventive chest care: an evidence-based ?Medicine challenge?

Ahmed Eltooby, Abdullah Dr Al-Temani, Mohamed Abd Elhafiz Prof Abd Elhaleem

College of Medicine, Tabuk University, TABUK, Saudi Arabia

Background: Recently, there has been increased interest in the gap between research findings and their implementation in Preventive Chest Services (PCS). The simplest practical strategy to overcome this problem is to implement the Evidence-Based Medicine (EBM) principles. Therefore, Excellence Health Care (EHC) environment can be developed within a culture characterized by increased patient satisfaction through continuous quality improvements.

General Objective: The study aimed to introduce and clarify the concepts of EBM and HCE as related to PCS to decision makers, researchers, and services' providers in order to improve the performance, efficiency, and quality of the current practice.

Material and Methods: The study has been developed through four consequential phases. The 1st phase involved a Systematic Literature Review (SLR) based on a well-structured process. The 2nd phase requisite a consultation process with preventive health experts (14) utilizing Delphi technique. The 3rd phase required a cross-sectional analytic research design and a representative sample of physicians (118) at the PHS delivery level. The last phase concerned with data management, interpretation and utilization of findings.

Results: The search and retrieval process yielded 184 related programs and models in which 21 programs and 7 models have met the inclusion criteria. The general characteristics of the studied sample of physicians have been described. Low degree of awareness of EBM and HCE has been detected and varied among the different levels of service delivery points. Important qualitative problems (24) and misconceptions (16) have been evaluated.

Conclusion: Addressing key policy concerns in the study arena could substantially enhance preventive chest care quality.

Pulmonary malignancies

P25

Quality from the patients perspective – a questionnaire study

Lisa Jelf Eneqvist¹, Mirjam Forsgren¹, Malin Lövgren², Carol Tishelman³, Åsa Wetterdahl¹, Karl Kölbeck¹

¹Karolinska university hospital Lung allergy clinic, STOCKHOLM, Sweden

²LIME, MMC, Karolinska intitute, STOCKHOLM, Sweden

³MMC, Karolinska institute, STOCKHOLM, Sweden

Every year approximately 600 patients are diagnosed with lung cancer at Karolinska University hospital; these patients are facing a tough period of investigation and treatment.

Over the years we have tried to measure what the patients think of the care they receive by handing out questionnaires, but the problem is that medical staff has interpreted the results according to there reality and context. In doing so we can't be sure that improvements are carried out from the patients perspective.

The purpose of this study was to study how patients, under evaluation for lung malignancy, experience the *quality* of care given to them.

The study is based on the form QPP (Quality from the patient's perspective). The patients have been asked to describe how they have experienced their care situations and how important each situation has been. 252 surveys were handed out with a response rate of 65%.

The result demonstrated care areas where patients wanted improvements. This information facilitates the work of ongoing improvements carried out at Lung Allergy clinic. We are able to intensify our work in shortening the waiting time when it is experienced most stressful and also to find actions in order to relieve the stress during waiting time itself. A lot of care areas were experienced as well-functioning. This is important to keep in mind at times of changing routines or reorganization. The response rate was high given the severely ill patient group. However, we have to suppose that this study might describe the experiences of the less ill patients.

Result and the questionnaire will be shown at the congress.

P26

Incidental detection on CT is an independant prognostic factor of survival in patients operated for non-small cell lung carcinoma

Andri Wilberg Orrason, Steinn Jonsson, Martin Ingi Sigurdsson, Kristjan Baldvinsson, Hunbogi Thorsteinsson, Tomas Gudbjartsson
University of Iceland, REYKJAVIK, Iceland

Objective: Non-small cell lung carcinomas (NSCLCs) are sometimes detected incidentally due to imaging for unrelated disease. We studied the rate of incidental detection and its impact on long term survival in a nation-wide cohort of patients operated for NSCLC.

Methods and materials: All patients that underwent pulmonary resection for NSCLC in Iceland 1991-2010. Incidentally and symptomatically detected patients were compared retrospectively in 5 year periods.

Results: Out of 512 patients, 174 (34%) were diagnosed incidentally. The incidentally detected tumors were smaller and diagnosed at earlier TNM-stages. 5-year disease specific survival (DSS) for patients with symptoms, incidentally detected on CXR, and CT, was 40%, 57% and 80% respectively. In multivariate analysis patients detected incidentally on CT had significantly improved DSS compared to those diagnosed on CXR or symptomatically (HR 0.38, 95% CI 0.16-0.88, $p=0.02$), after correcting for several differing factors including tumor stage.

Conclusions: One third of NSCLC patients are detected incidentally, and this ratio has not changed for two decades. Still, the proportion of CT-detected NSCLCs is increasing and these patients seem to have more favorable survival than patients detected incidentally on CXR or with symptoms.

P27

Medical thoracoscopy: outdated or still going strong?

Uffe Bodtger, Asbjørn Høegholm, Fatin Willendrup
Naestved Hospital, NAESTVED, Denmark

Background: thoracoscopy is the golden standard in diagnosing recurrent pleural effusions. Medical thoracoscopy (MT) with patient in light sedation and with local analgesia is a safe and cost-effective procedure. Two Nordic studies published since 1998. Only two departements in DK is active.

Method: retrospective analysis of MT performed in our department 01/01/2009 - 01/06/2012.

Results: we performed 19 MT (ECOG scores 0 or 1; female: $n=4$; median age 69 (range 46-84 years)) with no complications. Four patients proceeded to surgical VATS for diagnosis and three to surgical resection. Malignant mesothelioma was identified in five (25%) patients by MT; VATS identified additionally two (10%) and later surgery/VATS confirmed three cases. MT identified 4 patients with metastatic adenocarcinoma (lung: $n=3$, unknown: $n=1$), with VATS confirming the latter. Eight patients had reactive pleuritis (one confirmed by VATS) or other benign lesion. Three patients had an earlier malignant diagnosis, none had metastases herefrom. Five (26%) resp seven patients (36%) were dead 6 resp 12 months after MT.

Conclusion: MT is a safe procedure, sparring surgical procedures, identifying 9/11 malignant cases (82%).

Sleep and non invasive ventilation

P28

Audit on use of noninvasive ventilation (NIV) for patients (pt.) with exacerbation in Chronic Obstructive Pulmonary Disease (COPD) at a University Hospital in Denmark

I. Titlestad, H. Fretheim, M. Pourbazarargan
Odense University Hospital, ODENSE C, Denmark

Introduction: Pt. with clinical presentation of COPD in exacerbation and acute hypercapnic respiratory failure are routinely treated with NIV based on randomized trials showing benefit on less need of intubation and lower mortality. These trials included selected COPD pt. fulfilling predefined inclusion and exclusion criteria, and only limited data on unselected COPD pt. exist.

Method: Data from medical records and arterial gas analyses were retrieved from all pt. receiving NIV admitted acutely to an acute medical ward with transfer to a respiratory ward in the period 1st January to 31st December 2010. Demographic data collected included age, gender, diagnoses at discharge (comorbidities), and when present FEV₁. Criteria for ordination of NIV was judged by arterial gas analysis (pH lower than 7.35 and pCO₂ > 6 kPa) after initiated standard treatment and diagnosis of COPD. Primary measures were referral to ICU, 7- and 30-day mortality rate.

Results: In total 124 cases were studied (105 pt.: 91 pt. once and in 17 pt. > 1). COPD was present in 91 pt. but not in 14 pt. who all received NIV only once. In 98 COPD pt. cases (89%) pH was < 7.35 (mean 7.244 SD 0.24) and pCO₂ > 6.0 kPa (mean 10.85 and SD 3.70). When grouping the COPD pt. according to pH ≥ 7.25 (60 pt.) or pH < 7.25 (40 pt.) at initiation, higher 7- and 30-day mortality rates were seen for the lower pH group (17 and 23.3% vs. 30 and 32.5%) and transfer to the ICU was more frequent (5.0% vs. 20%).

Conclusion: NIV use in unselected pt. with COPD in a medical setting was initiated in pts. in more critical conditions compared to the randomized trials. Mortality rates were not surprisingly higher at lower pH levels at initiation of NIV. If NIV is offered to all eligible patients is planned.

P29

Prevalence of sleep bruxism in the general population: measurements and symptoms

Sigrun Sigmundsdottir, Erna S Arnardottir, Thorarinn Gislason
Landspítali - The National University Hospital of Iceland, REYKJAVIK, Iceland

Objectives: Sleep bruxism (SB) is a stereotyped movement disorder characterized by grinding or clenching of teeth during sleep. This study aimed to estimate SB in the general population.

Methods: Data were obtained from 426 adults aged 41-66 years.

All subjects answered questionnaires and were invited for an ambulatory type 3 sleep study with audio and electromyography of masseter muscles (T3, Nox Medical, Reykjavik, Iceland). Identification of SB and sleep apnea was based manual scoring and AASM diagnostic criteria (2007). When audio revealed movement or orofacial activity such as coughing and swallowing, these events were not included as SB events. SB identification was based on bruxism episode index (BEI), per hour of sleep (phasic, tonic and mixed). Low frequency SB was characterized by BEI ≥ 2 and high frequency SB by BEI ≥ 4 .

Results: Preliminary results for the first 189 subjects show a 16.4% prevalence of SB in the general population (3.7% with high frequency and 12.7% with low frequency). The 7 subjects with high frequency SB had on average \pm SD 7.5 ± 2.1 BEI while the 24 subjects with low frequency had on average \pm SD 2.8 ± 0.6 . Grinding or clenching teeth occurring at least weekly was reported by 10% of subjects. However only 2 out of 7 subjects with high frequency SB reported teeth grinding or clenching and none of those with low frequency SB. The majority of subjects reporting teeth grinding or clenching did not have measurable SB during the sleep study.

Conclusion: The low number of subjects with measurable SB, that reported teeth grinding or clenching, suggests that either the subjects are unaware of their condition or that the diagnosis criteria needs improvement. Also, more than one night of SB assessment may be needed as it may not occur every night.

P30

Daytime sleepiness, respiratory symptoms and quality of life. – An epidemiological study on general populations in Iceland and Sweden

Bryndís Benediktsdóttir¹, Christer Janson², Eva Lindberg², Erna Sif Arnardóttir¹, Thorarinn Gíslason¹

¹University of Iceland, REYKJAVÍK, Iceland

²Uppsala University, Respiratory Medicine and Allergology, UPPSALA, Sweden

Objective: This prevalence of excessive daytime sleepiness (EDS) and the association of EDS with respiratory symptoms and large variety of health variables was investigated in two well characterized random samples from the general population.

Methods: Adults aged >40 and living in Reykjavik, Iceland (n=939) and Uppsala, Sweden (n=998), were invited (www.boldstudy.org). Response rates 81, 1% and 62, 2%. In addition, the participants were asked to answer: The Epworth Sleepiness Scale (ESS), Short Form-12 and standardised questions about sleep and health, diabetes and hypertension.

Results: In Reykjavik mean (\pm SD) ESS was 6.0 ± 3.9 , compared to 6.1 ± 3.9 in Uppsala. The prevalence of EDS, defined as ESS scores >10 , were 18.5% in Uppsala and 18.4% in Reykjavik. EDS was more common among men than women and was more prevalent in age groups <60 years ($p<0.0001$) but not related to body mass index (BMI) or smoking status. Those reporting habitual snoring and apneas scored higher on ESS ($p<0.0001$) and so did also those with respiratory symptoms; wheeze and breathlessness ($p<0.05$), cough ($p<0.0001$), asthma ($P<0.01$) and nasal allergy ($p<0.02$). There were no difference in

EDS depending on insomnia, diabetes or hypertension. Mental health scores on SF-12 were significantly lower among those with EDS ($p<0.05$). There was no difference regarding physical health scores.

Conclusion: Excessive daytime sleepiness is a common complaint in the general population both in Iceland and Sweden. It's more common among men than women, among those who snore and have apneas. EDS is also related to respiratory symptoms, allergy and decreased mental quality of life.

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The Icelandic Sleep Apnea Cohort (ISAC)- Prevalence of Restless Legs Syndrome among patients with Obstructive Sleep Apnea before and after CPAP treatment, compared to the general population

Bryndís Benediktsdóttir¹, Christer Janson², Allan Pack³, Sigurður Júlíusson⁴, Erna Sif Arnardóttir¹, Thorarinn Gíslason¹

¹University of Iceland, REYKJAVÍK, Iceland

²Uppsala University, Respiratory Medicine and Allergology, UPPSALA, Sweden

³Center for Sleep and Circadian Neurobiology, University of Pennsylvania, PHILADELPHIA, United States of America

⁴Landsþítalinn University Hospital, REYKJAVÍK, Iceland

Objectives: To compare the prevalence of reported restless legs syndrome (RLS) between subjects with obstructive sleep apnea (OSA) and the general population. Also possible changes with CPAP treatment.

Materials and Methods: The OSA subjects (n=822) were newly diagnosed with moderate or severe OSA (665 males, 157 females). The control subjects (n=742) were randomly chosen Icelanders (394 males, 348 females) who participated in another epidemiological study (www.boldcopd.org). Measurements included a standardized RLS rating scale, questions about sleep and the Epworth Sleepiness scale. The change with CPAP treatment was assessed after 2 years (n=538).

Results: Among OSA males 23.3% reported RLS but 12.9% of control males ($p<0.001$). 35.8% of OSA females reported RLS but 24.4% of control females ($p=0.03$). Both among OSA patients and controls those with RLS more commonly reported insomnia, daytime sleepiness, nocturnal sweating, snoring and gastro esophageal reflux ($p<0.05$). No relationship was found between RLS and age, BMI, hypertension or respiratory disease in a logistic regression adjusting for the presence of OSA and the other factors mentioned. No relationship was found between RLS and sleep apnea severity. Subjects using CPAP had a decreased prevalence of RLS from 25.7% to 13.8% while no change was observed in those subjects not using CPAP ($p=0.04$ for difference between groups).

Conclusions: RLS is more prevalent among OSA patients than controls. CPAP treatment decreases RLS symptoms significantly.

POSTER SESSION 2

Interstitial and occupational lung disease

P32

Vitamin D Supplement – Is It Safe To Use In Well-Treated Sarcoidosis Patients

Andrea Browatzki, Ida Steffensen

Hilleroed Hospital, HILLERØD, Denmark

Rationale: Hypercalcemia occurs in about 2-10 % of patients with sarcoidosis. A VitD hypersensitivity syndrome can occur if extrarenal tissues produce 1,25(OH)₂D in an unregulated manner causing hypercalcaemia. Recently the withholding of VitD in VitD deficient potentially hypercalcaemic patients has been questioned. The aim of this study was to investigate if VitD and calcium treatment had influence on the calcium levels measured in blood, urine or bones and if there was an effect on the inflammatory activity in well-treated patients suffering from sarcoidosis.

Method: Retrospective, descriptive study performed on 99 consecutive, randomized sarcoidosis patients.

Patients underwent pulmonary function tests, X-ray and/or high-resolution CT (HRCT) of the lungs, dual energy X-ray absorptiometry, (DXA) and Ca²⁺ levels (urine, ionized, serum), angiotensin-converting enzyme (ACE), creatinine and 25(OH)D (VitD).

All patients who underwent treatment with immunosuppressive agents received Prednisolone and/ or Azathioprine or Methotrexate according to international guidelines.

About half of the patients with sarcoidosis in full remission received VitD supplement (10 to 38 µg daily) until desired level of 80nmol/l.

Results: VitD treatment was given to 41 (41,4 %) patients. Before any treatment 11 patients (11,1 %) had hypercalcemia, 9 (9,1%) had hypercalcinuri and DXA scanning was performed in 36 patients (36,3%); 10 (10,1%) had osteoporosis.

During VitD-treatment none of the sarcoidosis patients showed progression of the disease in either chest-X-ray, DLCO, reduction in FVC, elevation of Ca²⁺ (serum, ionized, urine), creatinine or ACE.

Conclusion: Supplement of VitD among well-treated sarcoidosis patients induced no progression of the disease.

P33

Comorbidity and survival in Danish patients with idiopathic pulmonary fibrosis

Charlotte Hyldgaard, Ole Hilberg, Elisabeth Bendstrup

Aarhus University Hospital, AARHUS C, Denmark

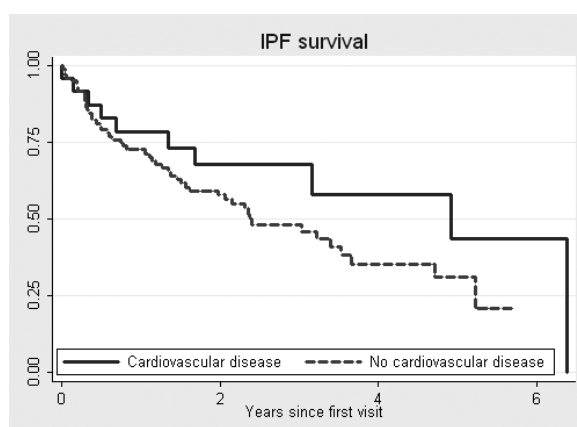
Introduction: Idiopathic pulmonary fibrosis (IPF) is the most common of the idiopathic interstitial pneumonias. It is a serious and progressive lung disease with a median survival of 3 years. In most cases, the disease is not diagnosed until pulmonary function is severely impaired.

Objectives: The aim of this study is to characterize comorbidity and co-medication in a cohort of Danish IPF patients, and to assess the impact of comorbidity on survival. **Methods:** The study population consists of 121 patients diagnosed with IPF at Aarhus University Hospital between April 2003 and April 2009. Patients were followed until November 2009. Details on referral, diagnostic examinations, pulmonary function tests, concomitant diseases and medication have been recorded in the West Danish ILD Registry.

Results: Arterial hypertension (15%), ischaemic heart disease (13%), diabetes mellitus (11%) and depression (8%) were the most common comorbidities among IPF patients at the time of referral. During follow up, additional ten patients were diagnosed with diabetes and ten patients with osteoporosis. Twenty-two patients (18%) received antidepressant treatment during the follow up.

Cardio-vascular disease, defined as coronary heart disease, cerebrovascular disease or peripheral arterial disease had been diagnosed in 21% (26/121) of the patients prior to the IPF diagnosis. No survival difference was found between patients who had this comorbidity and those who did not ($p=0.17$) (crude) and $p=0.073$ (adjusted for gender and age).

Conclusion: Comorbid conditions occur frequently in IPF. In this cohort, the presence of a serious comorbidity like cardio-vascular disease did not impact on survival, underlining the severity of the pulmonary disease itself.



Survival in IPF patients with and without cardiovascular disease.

IL-17 and Antigen-Specific IL-17-Responses in Distinct Subsets of Patients with Pulmonary Sarcoidosis

Mahyar Ostadkarampour¹, Anders Eklund¹, David Moller², Pernilla Glader³, Anders Lindén⁴, Johan Grunewald¹, Jan Wahlström¹

¹Karolinska Institutet, STOCKHOLM, Sweden

²Department of Medicine, Johns Hopkins University School of Medicine, BALTIMORE, MD, USA

³Department of Internal Medicine & Clinical Nutrition, Sahlgrenska Academy, GOTHENBURG, Sweden

⁴Institute of Environmental Medicine, Karolinska Institutet, STOCKHOLM, Sweden

Sarcoidosis is an inflammatory disorder characterized by granulomas most commonly affecting the lungs. Sarcoidosis patients with Löfgren's syndrome have a good prognosis, particularly if they are HLA-DR3+. The presence of mycobacterial antigens, and recently a specific protein, *M. tuberculosis* catalase- peroxidase (mKatG), in sarcoidosis tissue has been reported. Th1 cell responses against mKatG have previously been observed in sarcoidosis. In the present study our aim was to investigate the presence of interleukin (IL)-17 (synonymous to IL-17A) and IL-17-producing cells responding to mKatG in sarcoidosis.

Peripheral blood and bronchoalveolar lavage (BAL) cells were obtained from sarcoidosis patients. The production of IL-17 and IFN γ was evaluated by ELISPOT after stimulation of BAL and blood cells with mKatG. The concentration of IL-17 in the BAL fluid of sarcoidosis patients and healthy controls was measured by quantitative immuno-PCR (qIPCR).

The HLA-DR3+ sarcoidosis patients with Löfgren's syndrome had a significantly higher concentration of IL-17 in BAL fluid compared to healthy controls ($p < 0.05$). Patients with Löfgren's syndrome also had a significantly higher frequency of IL-17-producing cells in BAL fluid samples responding to mKatG, compared to patients without Löfgren's syndrome ($p < 0.05$). No such difference between patient groups was observed with regard to IFN- γ and not with regard to either cytokine in peripheral blood.

In conclusion, sarcoidosis patients with Löfgren's syndrome had higher levels of IL-17 and more IL-17-producing cells responding to mKatG locally at the site of inflammation. This is compatible with IL-17-producing cells playing a role in antigen elimination and the spontaneous recovery typical of patients with Löfgren's syndrome.

The Finnish IPF-registry

Eva Sutinen¹, Jaana Kaunisto², Eija-Riitta Salomaa², Ulla Hodgson³, Seppo Saarelainen⁴, Hannu Kankaanranta⁵, Minna Purokivi⁶, Riitta Kaarteenaho⁶, Marjukka Myllärniemi⁷

¹Lung factor, HELSINKI, Finland

²Turku University Hospital, TURKU, Finland

³Helsinki University Central Hospital, HELSINKI, Finland

⁴Tampere University Hospital, TAMPERE, Finland

⁵University of Tampere, TAMPERE, Finland

⁶Kuopio University Hospital, KUOPIO, Finland

⁷University of Helsinki, HELSINKI, Finland

Background: Idiopathic pulmonary fibrosis (IPF) is the most common idiopathic lung parenchymal disorder, with median survival of 3-5 years. The exact incidence and prevalence in Finland is unknown, although according to a previous study, the estimated prevalence of IPF in Finland is 1000 patients. This study was designed to gather epidemiological data on IPF in Finland.

Study aims: The aims of the study are 1) to gather clinical epidemiologic data on Finnish IPF and to unify criteria for diagnostics, treatment and referral to transplantation. 2) to collect biological material for research (genetics, biomarkers etc) and to obtain a database for patient recruitment for clinical trials.

Materials and methods: A search for Diagnosis numbers J84.1, J84.9 from all university Hospitals was made, and yielded 100-200 patients/hospital. The members of the Finnish IPF-consortium re-evaluated all patients. Informed consent to participate to the study was asked from all patients that met the criteria for IPF. Ethical board statement and permission to perform registry research has been obtained from all university hospitals and a permission to use hospital databases from all 21 hospital districts has been received from the National institute of health and welfare.

Results: Altogether 200 patients have been enrolled and 125 entered to the database. Initial data; male/female 0,6, mean age 68,5 years, 25% have been diagnosed using biopsy. Analysis on medication used is ongoing

Discussion: A national quality registry, and comparison of epidemiological data across different geographical locations, may lead to a better understanding of IPF etiology. A national quality registry hopefully leads to the centralized and uniform diagnostic and treatment protocol across the nation.

Gremlin overexpression in the mouse lung – a model for idiopathic pulmonary fibrosis

Katri Koli¹, Eva Sutinen¹, Pia Rantakari², Petra Sipilä², Marjukka Myllärniemi¹

¹University of Helsinki, HELSINKI, Finland

²University of Turku, TURKU, Finland

Introduction: Bone morphogenetic protein gremlin is overexpressed in the human idiopathic pulmonary fibrosis (IPF) lung. Previous studies have shown, that gremlin overexpression is related to fibrosis progression and epithelial-mesenchymal transition.

Methods: To induce tissue-specific, conditional expression of gremlin in the lung, we generated a mouse strain (SPC-lox-gremlin) where a loxP-NEO-Stop-loxP-gremlin cassette was cloned under the SPC-promoter. These mice were crossbred with the R26CreERT strain. Gremlin expression was analyzed using immunofluorescence. A subset of mice were exposed to silicon dioxide for two months to induce pulmonary fibrosis. At 6 months mice were analyzed for alterations in gene expression patterns, fibrosis or inflammation scores.

Results: High levels of gremlin protein was detected from 1/3 SPC-lox-gremlin strains crossed with the R26CreERT strain (tamoxifen inducible Cre). Gremlin expression was observed throughout the lung parenchyma, in cells that had alveolar type II appearance. Surprisingly, we found that gremlin expression was not inducible, but was observed constantly in all double-positive animals, which were healthy and fertile. At 6 months double-positive animals showed a very subtle phenotype including larger alveolar airspaces and thickening of the pleura. Exposure to silicon dioxide induced more severe alveolar injury; however, fibrosis and inflammation scores were not different from wild type mice.

Conclusions: Our results show, that lung-specific overexpression of gremlin in mice does not yield in acute respiratory problems, but may affect the pulmonary microenvironment over time. Further studies will elucidate the effect of local gremlin overexpression to pulmonary homeostasis and response to environmental stimuli.

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Pulmonary disease caused by non-tuberculosis mycobacterium (NTM)

Viacheslav Zhuravlev, Tatiyana Otten, Raisa Shegoleva, Ludmila Archakova, Nataliya Solovieva, Pavel Gavrilov, Marina Shulgina
Research Institute of Phthisiopulmonology, ST.PETERSBURG, Russian Federation

Objective: The frequency of NTM identified as a course of human disease increase in Russia as new sophisticated laboratory methods are introduced into the clinical practices.

Methods: Use of BACTEC MGIT 960 and molecular-genetic techniques in the bacteriological laboratory. 245 NTM cultures from 181 TB suspects patients were isolated using solid media and/or BACTEC MGIT960 (2011-12 years). Primary identification of isolated cultures as TB/NTM was done by colony morphology, time growth, acid fastness and bacterial cells' morphology.

Additionally all cultures were tested by real-time PCR of IS6110. Thus identified NTM strains were identified using GenoType CM/AS (HAIN Lifescience).

Results: Following NTM strains were detected: *M. avium* (146 strains 59.6%), *M. intracellulare* (29 strains 11.8%), *M. fortuitum* (25 strains 10.2%), *M. abscessus* (13 strains 5.3%), *M. peregrinum* (9 strain 3.6%), *M. chelonae* (7 strains 2.8%), *M. goodii* (4 strains 1.6%), *M. lentiflavum* (4 strains 1.6%), *M. xenopi* (3 strains 1.2%), *M. kansasii* (3 strains 1.2%) and *M. malmoense* (2 - 0.8%). The clinical symptoms of NTM pulmonary disease were variable and nonspecific. The clinical presentation frequently included fever, cough, weight loss, night sweats, hemoptysis, and dyspnea have been revealed only at 46(25.4%) patients. 12 patients(6.6%) had HIV co infection. Pulmonary infiltrates were the most common (57.4%). The location was unilateral in 53.5% and affection in upper lobes was observed in 79.5% cases.

Conclusions: The most common NTM specie in the North-West region of Russia is *M. avium*. Pulmonary disease by NTM has clinical and radiological symptoms similar to TB. Use of accurate and rapid molecular-genetic method - GenoTypeCM/AS helps to identify of NTM and to ensure adequate diagnosis and treatment.

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Activated CD8+ T and NKT cells in BAL fluid improves diagnostic accuracy in sarcoidosis

Anders Tøndell, Anne Rø, Arne Åsberg, Magne Børset, Torolf Moen, Malcolm Sue-Chu

St. Olavs Hospital, TRONDHEIM, Norge

Background: The clinical diagnosis of pulmonary sarcoidosis is based on the presence of noncaseating granulomas in an appropriate clinical setting with either bilateral hilar adenopathy and/or parenchymal infiltrates. Lymphocytosis with an increased CD4/CD8 T cell ratio in bronchoalveolar lavage fluid (BALF) is supportive. We investigated the diagnostic accuracy of a predictive logistic regression model in sarcoidosis, including BALF cell profile and the assessment of HLA-DR⁺ CD8⁺ T cells and Natural Killer T (NKT) cells.

Methods: Among 180 patients undergoing diagnostic bronchoscopy with bronchoalveolar lavage (BAL) and assessment of BALF lymphocyte phenotype by flow cytometry, a diagnosis of sarcoidosis was made in 48 patients. A binary logistic regression model with age, sex, BALF lymphocyte fraction, eosinophils and CD4/CD8 ratio (basic model) was compared to a final model also including fractions of HLA-DR⁺ CD8⁺ T cells and NKT cells. Diagnostic accuracy of the two models was assessed by analysis of Receiver Operating Characteristic (ROC) curves.

Results: The area under the ROC curve was 0.888 (95% CI: 0.838-0.938) and 0.934 (95% CI 0.895-0.973) for the basic and final model, respectively.

Conclusion: Assessment of HLA-DR⁺ CD8⁺ T cell and NKT cell fractions improves diagnostic accuracy and further strengthens the importance of BAL in the diagnostic work-up of sarcoidosis.

Respiratory health in cleaners: Results from the Respiratory Health in Northern Europe study

Øistein Svanes¹, Trude Duelien Skorge², Bertil Forsberg³, Thorarinn Gislason⁴, Mathias Holm⁵, Christer Janson⁶, Ane Johannessen², Rain Jögi⁷, Stein Håkon Lygre², Ferenc Macsali², Dan Norbäck⁶, Ernst Omenaas², Francisco Gomez Real¹, Vivi Schlünssen⁸, Torben Ingvar Sigsgaard⁸, Kjell Toren⁹, Gunilla Wieslander⁶, Tor Aasen², Cecilie Svanes¹

¹University of Bergen/Haukeland University Hospital, BERGEN, Norway

²Haukeland University Hospital, BERGEN, Norway

³Umeaa University, UMEAA, Sweden

⁴Landspítali University Hospital, REYKJAVIK, Iceland

⁵Sahlgrenska University Hospital, GOTHENBURG, Sweden

⁶Uppsala University, UPPSALA, Sweden

⁷Tartu University Hospital, TARTU, Estonia

⁸Aarhus University, AARHUS, Denmark

⁹University of Gothenburg, GOTHENBURG, Sweden

Introduction: There are few studies on asthma in cleaners from Northern Europe, and very limited knowledge of COPD-risk in cleaners.

Aims and Objectives: To assess airway symptoms and obstructive lung disease in relation to years having worked as a cleaner in Northern Europe.

Methods: Respiratory Health In Northern Europe (RHINE) is a postal questionnaire follow-up study of the ECRHS I stage I cohort established in 1990-94. At the follow-up RHINE III (in 2010-12), 13405 subjects responded to the questions "have you ever worked as a cleaner" ("Yes" n=2114) and numbers of years in such work. Associations with self-reported asthma, respiratory symptoms and doctor's diagnosed COPD were analysed with multiple logistic regression, adjusting for sex, smoking, age, education and centre.

Results: Ever having worked as a cleaner was significantly associated with respiratory symptoms, asthma and COPD. This was only found for those who had worked with cleaning more than one year, while there was no clear difference between having worked with cleaning >1 to 4 years vs ≥4 years with cleaning.

*Yes to 3 or more of questions 1-6 in the RHINE III questionnaire.

Conclusion: Working as a cleaner for more than one year was associated with an increased occurrence of respiratory symptoms and obstructive lung disease.

Idiopathic Interstitial Pneumonias. A nationwide epidemiological study in Iceland

Sigurdur James Thorleifsson¹, Gunnar Gudmundsson¹, Jonas Geir Einarsson², Helgi Johannes Isaksson³

¹Department of Respiratory Medicine, Landspítali University Hospital, REYKJAVIK, Iceland

²Department of Pulmonary Medicine, University Hospital in Lund, LUND, Sweden

³Department of Pathology, Landspítali University Hospital, REYKJAVIK, Iceland

Background: Idiopathic interstitial pneumonias are a group of diseases characterized by fibrosis in the lung interstitium and they can lead to respiratory failure. There is limited information available on epidemiology in the Nordic countries.

Methods: We studied subgroups of idiopathic interstitial fibrosis in Iceland during the period from 2002-2012. Cases were found by searching the Department of Pathology database. Included were those that had surgical biopsy for diagnosis. The following diseases were studied: Usual interstitial pneumonia (UIP), non specific pulmonary fibrosis (NSIP), respiratory bronchiolitis-associated interstitial lung disease (RBILD) and desquamative interstitial pneumonia (DIP). We studied epidemiology including incidence.

Results: During this period there were a total of 40 confirmed cases: UIP 15 cases, 11 (73%) males and four (27%) females with median age at diagnosis 65.7 years (range 44-67 yrs), incidence 0.4/ 100.000 per year. NSIP 21 cases, 11 (52%) males and 10 (48%) women with median age at diagnosis 57.1 years (range 36-76 yrs), incidence 0.6/100.000 per year. RBILD two cases, 2 (100%) females with incidence 0.06/100.000 per year. DIP: two cases, one (50%) male and one (50%) female with incidence 0.06/100.000 per year. Mortality was high in association with UIP but not NSIP.

Conclusion: Idiopathic interstitial pneumonias confirmed by surgical biopsy were rare in Iceland and idiopathic pulmonary fibrosis was the most common form.

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Limited evidence for early mobilisation of patients hospitalised with community-acquired pneumonia. A systematic review

Dorte Melgaard¹, Morten Tange-Kristensen²

¹North Denmark Hospital, HJØRRING, Denmark

²Copenhagen University Hospital Hvidovre, HVIDOVRE, Denmark

Method: The Embase, PubMed, CINAHL, Cochrane Database of Systematic Reviews and PEDro were searched up to June 2012. Two independent reviewers identified 355 studies, but only two studies (1,2) already included in a 2010 systematic review (3) fulfilled inclusion criteria.

Results: An open label study (1) that compared three interventions in 145 patients, showed that a patient group undergoing intensive bottle blowing treatment (that probably also to some extent were mobilised - not described), were hospitalised fewer days, mean of 3.9 versus 5.3 in a group of patients early mobilised but not bottle-blowing ($P = 0.01$). No significant difference was seen in relation to the third group who were instructed to sit up and take 20 deep breaths 10 times a day. The other, a group randomisation (different wards) study (2) that compared usual care ($n=231$) with early mobilisation ($n=227$), defined as at least 20 minutes sitting out of bed or ambulating within 24 hours of hospitalisation, showed reduced length of stay in the intervention group (5.8 versus 6.9 days).

Conclusion: There is limited evidence for the positive effect of early mobilisation to length of stay for patients hospitalised with community-acquired pneumonia. Further studies evaluating the effect of early mobilisation are needed for this patient group.

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P42

Cause-specific mortality of TB-patients from Estonia: do they die from TB?

Piret Viiklepp, Kaja Rahu, Mati Rahu

National Institute for Health Development, TALLINN, Estonia

Objective: To assess the risk of death in the cohort of patients diagnosed with respiratory tuberculosis (TB).

Methods: Data on TB-patients diagnosed alive with respiratory TB at working age 25-64 years in 1997-2009, were obtained from the Estonian TB registry. The cohort of 3496 males and 1266 females was traced for mortality through population and cause of death registries from the date of diagnosis up to the end of 2011. The risk of death in the cohort compared to the general population

of Estonia was measured by the standardized mortality ratio (SMR) with 95% confidence interval (CI).

Results: During the period 1997-2011, 1360 deaths were observed vs. 306.32 expected (SMR=4.44; 95% CI 4.20-4.68) among males, and 269 deaths vs. 37.38 expected (SMR=7.20; 95% CI 6.34-8.06) among females. One fourth of deaths occurred due to TB. Statistically significant excess mortality was found for cancer, diseases of the circulatory, respiratory or digestive system. Elevated risk was found for external causes of death, especially for exposure to excessive cold (SMR=8.41; 95% CI 6.24-11.08 in males, and SMR=15.13; 95% CI 6.08-31.16 in females). High risk was observed for selected alcohol-related causes (SMR=4.90; 95% CI 4.04-5.77 in males and SMR=11.15; 95% CI 7.68-15.66 in females).

Conclusions: Our study demonstrated extremely high mortality risk in the cohort of TB-patients compared to the general population, which was caused not only by TB but was clearly related to alcohol abuse in the cohort.

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Trends in tuberculosis incidence among healthcare workers in Estonia, 1999-2012

Kai Kliiman¹, Piret Viiklepp², Manfred Danilovits¹, Kaja Hurt¹, Anastasia Pärnsalu³

¹Tartu University Hospital, TARTU, Estonia

²National Institute for Health Development, TALLINN, Estonia

³The North Estonia Medical Centre, TALLINN, Estonia

Objective: In 1998, the tuberculosis (TB) incidence in Estonia was 47.5 new cases per 100.000 population and the same year National Tuberculosis Program (NTP) was established. The main aim of NTP was the reorganization of the TB treatment strategy including implementation of infection control measures, regular trainings for healthcare workers (HCWs) and renovation of all TB wards. We compared the incidence of TB among HCWs during the periods 1999-2002 and 2009-2012 to evaluate the influence of NTP activities to the HCWs TB incidence.

Methods: Cross-sectional descriptive analysis of TB Registry surveillance data.

Results: In period 1999-2002 were diagnosed 46 new cases of TB among HCWs and 37 of them (80.4%) had pulmonary TB. The average age of the cases was 41.0 years (range 22-66) and 89.1% of patients were female ($n=41$). At the time of diagnosis 17 (37.0%) HCWs were asymptomatic, 8 (17.4%) were smear positive and 8 (17.4%) had multidrug-resistant (MDR) TB. In period 2009-2012 were identified 9 new TB cases among HCWs and 88.9% ($n=8$) of them had pulmonary TB. The average age of the HCWs was 41.2 years (range 25-60) and 66.7% of cases were female ($n=6$). At the time of diagnosis 33.3% ($n=3$) HCWs were asymptomatic and 3 (33.3%) were smear positive. Of all HCWs 22.2% had MDR-TB ($n=2$).

The incidence rate of HCWs in 1999-2002 was 234.3 cases per 100.000 employees and for period 2009-2011 45.4, respectively. In general population the incidence rates in the same periods were 42.4 and 21.0 cases per 100.000 population, respectively.

Conclusion: Since 1999, TB incidence among HCWs decreased 5.2 times, but it is still 2.2 times higher than the rate for the

general population. It is urgent to strengthen the implementation of infection control measures to reduce this occupational hazard.

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Non-invasive ventilation support during endurance training in COPD

Brit Hov¹, Kari Kvisselien², Trude Støver³, Tiina Andersen⁴

¹*Oslo University Hospital, OSLO, Norway*

²*Innlandet Hospital Trust, LILLEHAMMER, Norway*

³*Akershus University Hospital, LØRENSKOG, Norway*

⁴*Haukeland University Hospital, BERGEN, Norway*

Objective: Physical activity is an important part of rehabilitation for people with COPD. Exercise intensity is essential to obtain the desired physiological changes. Dyspnoea may make it difficult to achieve the required intensity. If non-invasive ventilation support (NIV) can relieve and assist overloaded respiratory muscles, this may help people with COPD to improve exercise tolerance.

Methods: We conducted a literature study with systematic search based on methodology from evidence based practice to determine if NIV can improve training tolerance during endurance training in COPD.

Results: A total of 26 articles were included. 12 physiological (one work out), 9 clinical (training intervention > 6 weeks) and 5 reviews. Physiological studies suggest that using NIV during endurance training relieves stress on some components of the respiratory muscle pump and reduces respiratory work load. Increased exercise intensity and duration, work load, walking distance, O₂-uptake and levels of dyspnoea was measured during training. All the clinical studies showed a positive effect of NIV, with the exception of one. Increased work capacity or activity tolerance was shown by increased VO₂max or tolerated intensity, time, work load or walking distance, along with a reduction in measured blood lactate, higher anaerobic threshold and an improvement in speed:lactate-ratio was shown in some studies. The effect appears to be greatest in the patients with severe COPD. The most used NIV was Bi-level PAP.

Conclusions: People with COPD may benefit from NIV during endurance training. Unanswered questions remain regarding the selection of patients, the best settings and mode of ventilatory support.

P45

Exploration and development of practice with non-invasive ventilation (NIV) to patients with chronic obstructive pulmonary disease (COPD) based on the patients perspectives on the treatment

Helle Marie Christensen¹, Lotte Huniche², Ingrid Titlestad³

¹*Institute of Clinical Research, University of Southern Denmark, ODENSE C, Denmark*

²*University of Southern Denmark, Institute of Public Health, ODENSE, Denmark*

³*Department of Respiratory Medicine J, Odense University Hospital, ODENSE, Denmark*

Background: Communication during treatment with NIV is difficult because of the mask itself, the noise from the machine and patients distress. Assessment of life expectancy and end stage COPD is difficult and often discussed in the clinical setting, especially with regards to continuation of respiratory assistance / NIV as life-sustaining treatment.

There is little knowledge of how the patients experience NIV. Health professionals express a need for developing new clinical strategies which draws on patients perspectives.

Method: This study is based on critical psychological practice research where a co-researchers' group was set up to describe and analyze practice of NIV treatment in collaboration with the researcher. Health professionals contributed with experience-based issues, and the researcher contributed with issues based on a combination of fieldwork and semi-structured interviews with 16 patients and 4 relatives.

Results: Patient interviews revealed that 15 patients expected and wanted to be treated with NIV even though 10 of the interviewed described fear during treatment and 14 experienced more or less discomfort.

Conclusion: The practice research approach facilitated ongoing development of clinical practice related to NIV treatment. In particular, the investigation of patient perspectives generated results that were highly productive in qualifying the multidisciplinary cooperation and in developing and implementing new management strategies.

The research project runs from 2011 to 2014 where further results will be available.

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Survival among defaulters and treatment failures from treatment of pulmonary tuberculosis in Estonia

Lea Pehme¹, Manfred Danilovits¹, Piret Viiklepp², Alan Altraja³

¹*Tartu University Hospital, TARTU, Estonia*

²*Estonian Tuberculosis Registry, National Institute for Health Development, TALLINN, Estonia*

³*Department of Pulmonary Medicine, University of Tartu, TARTU, Estonia*

Defaulters and failures from treatment of pulmonary tuberculosis (PTB) have unfavorable treatment outcome and impart significant transmission risk due to infectiousness. This risk is particularly

dangerous when coinciding with difficult-to-treat PTB/HIV co-infection.

Objective and Methods: We estimated survival of all PTB patients after treatment default or failure registered by Estonian Tuberculosis Registry during 2004-2006 (n=160). The patients were followed until 12.12.2011 and Kaplan-Mayer analysis was used for survival analysis.

Results: Median follow-up time was 5.94 (IQR 3.21-6.68) years. Fifty defaulters (31.3%) and 17 patients with treatment failure (60.7%) died during the observation period. Twenty-four deaths (48.0%) occurred among defaulters and 11 deaths (64.7%) among failures due to TB and 26 (52.0%) and 6 (35.3%) due to other reasons, respectively (p=0.23).

Among the 50 patients (31.3%), who died, median survival time was 1.86 (IQR 0.88-3.04) years. Median survival after the TB diagnosis was 2,086 (range 370.0-2,920.4) days among defaulters and 1,440 (235.0-3,153) days among failures (p=0.26). However, median survival after default (2168.5, range 269.7-2824.1 days) was significantly longer than after failure (933.0, range 59.7-2,863.8 days) (p=0.016). Distinctly, median duration of treatment was significantly shorter (111.0, range 1.1-415.8 days) among defaulters than among failures (360.5, range 26.3-903.7 days) (p<0.001). None of the subjects, who returned to treatment, died during the observation period.

Conclusions: Despite the more durable treatment among failures, the survival was shorter after failure than after default suggesting a better prognosis after default. Return to treatment should also be strongly encouraged.

P47

Miliary tuberculosis with pericardial effusion in a patient treated with a TNF-alpha inhibitor

Kirsten Braendholt Rasmussen, Casper Lund-Andersen, Mette Charlotte Grove

Roskilde University Hospital, ROSKILDE, Denmark

TNF-alpha inhibitors are used in the treatment of rheumatic diseases. TNF-alpha plays a role in the function of macrophages which is crucial to the ability to control TB infection. Guidelines recommend screening for TB before starting treatment with TNF-alpha inhibitors.

Objectives: A 45-years old man was admitted to hospital due to two months of exhaustion and two weeks with cough and fever. He suffered from Bechterew's disease which for two years had been treated with Adalimumab (Abbott,USA). Before starting this TB was ruled out by X-ray and Quantiferon-test.

Methods: CRP, ECG and vital parameters were monitored and x-ray was done. Sputum was examined including microscopy, culture and PCR for mycobacteria. The x-ray showed extensive interstitial infiltrates and cardiomegaly why echocardiography was done. TB was suspected and treatment initiated.

Results: Initially oxygen saturation was 94%, respiratory frequency 30. The stethoscopy was normal, CRP 65mg/l. ECG showed atrial fibrillation, echocardiography a pericardial effusion of 3cm. Pericardiocentesis was done. The TB diagnosis was confirmed by a positive smear and PCR of the sputum. The patient recovered on antituberculous and Prednisolone treatment. Contact

investigations localized the infection to a pub visited weekly by our patient. Three other visitors were diagnosed with TB and the same strain was found.

Conclusion: The increasing prescription of TNF-alpha inhibitors imply increase in the risk of TB, most commonly due to reactivation of latent disease. A case describing a person recently infected with TB while treated with Adalimumab is presented. It should be noted that patients treated with TNF-alpha inhibitors presenting new general or pulmonary symptoms might have TB, even if earlier screening was negative.

P48

How can we assess driving abilities among patients with COPD and respiratory failure?

Laila Vatn

Sykehuset Innlandet HF, FOLLEBU, Norge

Introduction: Litterature and studies have shown that respiratory failure can effect physical and cognitive function. This is seldom assessed when it comes to patients with COPD and the effect on driving abilities.

Aim: I will give an introduction to how to assess driving abilities among patients with COPD and respiratory failure. To drive is an important activity to most people and many patients depend on driving to be able to function in every day life.

Methods: I will present some of the methods I use, as well as a description of potential actions. In addition I will use patient examples to illustrate how important mapping of function is in assessing driving abilities.

Results: A multidisciplinary approach to assessing the ability of driving is important as COPD with respiratory failure affects quality of life and daily activities. We have the knowledge and methods to assess daily activities and can contribute to a holistic assessment for these patients.

P49

Analysis of P2Y₁₂ purinergic receptor expression on human bronchial epithelial cells

Siiri Altraja, Alan Altraja

University of Tartu, TARTU, Estonia

We have recently confirmed the presence of the P2Y₁₂ purinergic receptor on human bronchial epithelial cells (HBEC). We have also shown an up-regulation of cysteinyl leukotrienes' (CysLT's) receptors by CysLT themselves. Apart from interactions between CysLT receptors, alternative pathways of CysLT's action provoke interest, e.g. an action of leukotriene E₄ (LTE₄) on P2Y₁₂. However, this possibility has not confirmed on HBEC, neither there are data on the effect of CysLT on the expression of the P2Y₁₂ receptor.

To evaluate the effect of CysLT on the expression P2Y₁₂ mRNA, cultured HBEC were exposed to 0-250 nM LTE₄ for 1-24 h. The potential LTE₄-mediated actions were blocked with montelukast as a CysLT₁-specific antagonist and BAY u9773 as a dual antagonist, both at 10⁻⁶ M. Changes in the expression of P2Y₁₂ mRNA were analyzed with RT-qPCR.

LTE₄ significantly increased the expression of P2Y₁₂ mRNA in the HBEC already at 50 nM concentration with the significant increase occurring at 12 h onward (1.5-fold, $p < 0.05$). In parallel, the mRNA expression of the CysLT₁ and CysLT₂ receptors was also up-regulated (1.8- and 1.5-fold with 50 nM LTE₄, respectively, $p < 0.05$). Both montelukast and BAY u9773 significantly blocked the effect of LTE₄ on the P2Y₁₂ expression with restituting its expression to the baseline level.

The results show the ability of up-regulation of the P2Y₁₂ receptor by LTE₄, and suggest that this up-regulation may be either mediated by the ordinary CysLT receptors or can be at least inhibited by the CysLT antagonists.

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P50

Extremely drug-resistant tuberculosis (XXDR-TB) in Estonia: survival and risk factors for mortality

Manfred Danilovits¹, Piret Viiklepp², Lea Pehme¹, Alan Altraja³

¹Tartu University Hospital, Lung Clinic, TARTU, Estonia

²Estonian Tuberculosis Registry, National Institute for Health Development, TALLINN, Estonia

³Department of Pulmonary Medicine, University of Tartu, TARTU, Estonia

Background: The emergence of extremely drug-resistant tuberculosis (XXDR-TB) worldwide has led to a fear of untreatability. The terms XXDR-TB and "totally drug-resistant tuberculosis (TB)" are not officially defined, but designate in practice isolates resistant to all first-line and most second-line drugs, including all injectables, all fluoroquinolones and ethionamide/prothionamide.

Aims: We observed all patients with pulmonary XXDR-TB registered in the Estonian Tuberculosis Registry until 25.01.2013 and used Kaplan-Meier method for survival analysis and multivariate Cox regression analysis to identify the risk factors for mortality.

Results: Of the 20 patients, 15 (75%) were male. Median age was 42.0 years (IQR 35.0-55.0). Fifteen patients (75%) were previously treated for TB. The patients had resistance to on average 10.5 drugs.

The follow-up lasted up to 155 months. In most cases, XXDR-TB developed during prolonged treatment and was related to serious adherence problems, particularly alcohol abuse. Six patients cured, 11 died and 3 patients were on treatment at database closure. The median survival time was 29.44 months (IQR 11.84-10.91).

One-year, 5-year and 10-year survivals were 75%, 47% and 25%, respectively. Living alone was protective against mortality but disability status contributed to mortality ($p = 0.010$ and $p = 0.002$, respectively). After adjustment for age, only disability status before TB diagnosis significantly contributed to mortality [hazard ratio (HR) 9.88, 95% confidence interval (CI) 1.90-51.52, $p = 0.007$].

Conclusions: Despite the extremely restricted management options, satisfactory treatment outcomes are possible in XXDR-TB.

However, a prolonged risk of transmission of XXDR-TB infection exists in the society due to patients' protracted infectiousness.

P51

A Patient with Angelman Syndrome and disseminated infection with *M. bovis caprae*

Jan Heyckendorf, Christoph Prof. Dr. med. Lange

Research Center Borstel, BORSTEL, Germany

The 22 year-old patient with Angelman Syndrome was presented for evaluation of a chronic pericardial effusion (8 years) and new epileptic seizures. Due to a post-traumatic paraplegia the patient is immobilized permanently. Moreover, there was a positive tuberculin skin test with subsequent prophylactic therapy with isoniazid for 9 months. The first occurrence of a grand mal seizure was reported. A thorax computer tomography (CT) showed extensive bilateral infiltrates compatible to pulmonary tuberculosis and a pericardial effusion. A left frontal tuberculoma with surrounding edema was depicted in a cranial CT. The echocardiography presented a pericardial effusion with a swinging heart impression with no obvious hemodynamic effect. The culture of a broncho-alveolar lavage showed the presence of *M. bovis caprae* with susceptibility against all first-line drugs. Because of the inability of indicating loss of vision, therapy with ethambutol was not initiated. Instead the regime with isoniazid, rifampin and pyrazinamide was extended by adding moxifloxacin. Dexamethasone was added to the regime as detumescent agent. Because of mental retardation with compliance issues, a port-system was installed for intravenous anti-tuberculosis drug application. Autoimmune-antibodies were negative. After 10 weeks of treatment, regressive pulmonary infiltrations could be registered in CT-imaging. Gastric aspirate specimen were now microscopically negative for acid fast bacilli. The reduction of dexamethasone lead to recurrent seizures. The initiation of anti-epileptic treatment was no option (interaction of cytochrome P450 enzymes). The pericardial effusion was not sufficiently regressive in controls by regular echocardiography and drained successfully.

P52

Key elements factors of implementing advanced nursing care services for individuals with chronic illnesses – Systematic literature review

Rut Gunnarsdóttir

Heilbrigðisstofnun Suðurlands, REYKJAVÍK, Iceland

The aim of this thesis is the process of implementation of an innovation within the healthcare services. The number of individuals who suffer from chronic illnesses is growing fast, and advanced nursing care is at utmost importance. The purpose of this thesis is to put forth evidence-based checklists for implementation of advanced nursing care for individuals with chronic illnesses. Light is shed on issues that characterize advanced nursing care for patients with chronic illnesses and what needs to be considered

when implementing such care. This project is based on Donabedian's ideology on quality of service in the healthcare system, which focuses on quality, safety and practicality. Thirty-one studies met the inclusion criteria and were used in the review. Theories and models for the introduction of innovation, point to a process that may be set forth in variable steps. What they have in common is a focus on goalsetting, to enable participants, to prepare the innovation properly, to show persistence and evaluate performance. Most of the services were provided in hospitals or in clinics. For successful implementation and operation of specialized nursing it is important to base it on knowledge and evidence-based practice.

It is important to prepare well for the innovation of advanced nursing care for the chronically ill. For the innovation of advanced nursing care, it is recommended to use evidence based data for directions or checklists.

P53

Rehabilitation in healthcare: a concept analysis

Jonina Sigurgeirsdottir

Reykjalundur rehabilitation, MOSFELLSBAER, Iceland

Background: Rehabilitation is a complex concept and in some areas its boundaries are unclear. The concept has been used in healthcare for almost a century and its meaning has evolved over that time.

Aims: To clarify the concept of rehabilitation in healthcare and examine the connection between the concepts of 'rehabilitation' and 'disability.'

Design: A concept analysis as developed by Walker and Avant.

Method: A literature search in PubMed, CINAHL and Scopus yielded a number of peer-reviewed articles that were arranged using the Matrix method.

Discussion: Impairment, disability and handicap are captured by the World Health Organisation (WHO) as central topics stating that 'Rehabilitation provides disabled people with the tools they need to attain independence and self-determination'. Critics maintain that the word 'disabilities' gives this definition a negative focus, undermining patients' abilities. As it is difficult to maintain that a person who needs the resource of rehabilitation is not disabled it is promising that the ICF definition gives 'disability' proper consideration, by making it clear that in the context of 'function' and 'participation' a health decrement can occur to anyone, and hence that anyone can experience 'disability' for a time.

Results: The concept of 'rehabilitation' has developed from a strong physical orientation into a holistic focus involving patient's being (needs), body functions, structure, activity, participation, and contextual factors.

Conclusion: The ICF model provides a comprehensive definition of the concept of rehabilitation and successfully connects the concept of 'disability' with the concept of 'rehabilitation'.

P54

Exercise induced dyspnea among 12–13 year old children

Henrik Johansson

Uppsala University, UPPSALA, Sverige

Introduction: Many children are limited in their physical activity because of exercise induced dyspnea (EID).

Aim: The aim was to investigate the prevalence of EID, asthma and physical activity level among a population of 12-13 year old children in Uppsala, Sweden.

Method: A questionnaire was sent to 3815 parents asking them to answer the questionnaire together with their child.

Results: The response rate was 61 % (n=2312). EID during the last 12 months was reported by 14.3 % (n=330) (girls 16.9 vs. boys 11.8 %, p<0.001). Physician-diagnosed asthma was reported by 14.6%. Of the participants reporting EID 61% (n=202) did not report having a physician-diagnosed asthma. The participants with EID, but without physician-diagnosed asthma reported significantly more problems such as rhinitis, current wheeze, daytime dyspnea, disturbed sleep absence from school, and use of asthma medication compared to the group without EID. Children with EID and asthma used bronchodilators and inhaled corticosteroids to a larger extent than children with EID but no diagnosis of asthma (27.3 vs. 11.3%) and (31.2 vs. 4.4%) respectively (p<0,001). Only 12.4 % of the total population (n=2312) reached the international physical activity recommendations (≥1 hour/day 7 days/week on a moderate to vigorous level). The proportion of children that was physically active ≥ 1 hour/day 7 days/week was 13% among children with EID and 12.3% in children without EID (p=0.72).

Conclusion: Self reported exercise induced dyspnea is common in children and the majority of those children do not have an asthma diagnosis or asthma treatment. Only a minority of Swedish children have a self reported physical activity level that is in line with international recommendations.

P55

Long term changes in lung function parameters in relation to exercise capacity in healthy middle-age men

Amir Farkhooy¹, Johan Bodegård², Hans Hedenström³, Christer Janson³, Sverre Kjeldsen², Knut Liestøl⁴, Per Torger Skretteberg², Knut Stavem⁵, Andrei Malinovski³

¹Uppsala University, UPPSALA, Sweden

²Dept. of Cardiology, Oslo University Hospital, Ullevaal, OSLO, Norge

³Dept. Medical Sciences, Uppsala University, UPPSALA, Sverige

⁴Dept. of Informatics, University of Oslo, OSLO, Norge

⁵Dept. of Medicine, Akerhus University Hospital, OSLO, Norge

Background: Exercise capacity decline occurs in adulthood simultaneously with age-related deterioration in cardiac-, lung- and peripheral muscle function. Two of the most used lung function parameters, forced expiratory volume in 1s (FEV₁) and forced vital capacity (FVC), also decreases across the adult age-span.

Aim: To investigate the relationship between these standard lung function parameters and exercise capacity (EC) in healthy subjects.

Methods: From 1972 to 1975, 2014 apparently healthy men aged 50 years (range 38 - 62 yrs) were included in a prospective study. The subjects performed spirometry (FEV₁, FVC) and symptom-limited exercise ECG test on an ergometer bicycle (ramp protocol 100W/50W increase every 6 min). Spirometry and exercise test was performed 7 years later (1979 to 1982) in 1425 subjects. EC was calculated as the sum of all the work during each of the workload levels.

Results: Significant correlations between EC and FEV₁ ($R^2=0.17$, $p<0.001$) and FVC ($R^2=0.13$, $p<0.001$) were found in univariate analyses. However, the additive explanatory value of lung function parameters for EC was limited in a multiple linear regression model including age, height, weight, exercise habits and smoking status ($R^2=0.37$ vs. $R^2=0.32$ for a model without FEV₁ and FVC). A significant decline between baseline and follow-up was found for EC ($-32.2\pm0.6\%$, $p<0.001$), as well as for FEV₁ ($-4.8\pm0.5\%$, $p<0.001$) and FVC ($-9.1\pm0.3\%$, $p<0.001$). Longitudinal changes in FEV₁ and FVC did not relate to changes in EC ($p=0.97$ and $p=0.50$).

Conclusion: In healthy adult males, lung function parameters had a limited explanatory value for exercise capacity at baseline. Temporal decline in exercise capacity at seven years follow-up was not related to the decline in lung function capacity.

P56

Long term effects of environmental tobacco smoke in the European Community Respiratory Health Survey II

Inga Sif Ólafsdóttir, Christer Janson

Respiratory Medicine & Allergology, UPPSALA, Sverige

Objective: Passive smoking is associated with harmful effects on respiratory health. Most studies on this topic are cross-sectional and longitudinal studies are warranted in order to provide more evidence of a causal association. The aim of this study is to evaluate the association between respiratory health and passive smoking exposure.

Methods: The analysis includes data from 29 centres in the European Community Respiratory Health Survey I and II (ECRHS). The target population includes 15,468 subjects with smoking data in stage 2 of ECRHS I, of these 9053 (58.6%) supplied data on smoking in the ECRHS II. The follow up time was 8.8±1.2 years (mean±SD). The present analyses included 5429 subjects who were non-smokers in both surveys.

Results: The 5429 (55% women) subjects had a mean age (±SD) of 34.3(±7.2) years in ECRHS I and 43.3(±7.2) years in ECRHS II. The passive smoking exposure was 6.8% only in ECRHS II; 23.4% only in ECRHS I and 17.1% in both surveys.

Subjects exposed to passive smoking had increased risk (OR (95% CI)) of onset of wheeze with breathlessness (1.90 (1.17-3.09)), nocturnal chest tightness (1.49 (1.07-2.06)), attacks of breathlessness following activity (1.74 (1.33-2.28)) and long-term cough (2.34 (1.70-3.22)). No significant association was found between passive smoking and change in bronchial responsiveness or lung function.

Conclusions: Passive smoking is related to an increased risk of developing asthma related symptoms and cough during a long-term follow-up.

P57

Hypoxia activates inflammasome leading to activation of IL-18 in the lungs

Fadila Telarevic Cero¹, Karl Otto Larsen², Geir Christensen³, Ole Henning Skjøsberg²

¹*Department of Pulmonary Medicine, Oslo University Hospital Ullevål, OSLO, Norge*

²*Department of Pulmonary Medicine, Oslo University Hospital Ullevål, OSLO, Norge*

³*Institute for Experimental Medical Research, Oslo University Hospital Ullevål, OSLO, Norge*

Introduction: Inflammasomes are molecular platforms which are part of the innate immunity and activate IL-18 and IL-1 β through caspase-1. They can be activated upon cellular infection and stress. (K. Schroder & J. Tschoop, Cell, 2010). Several sterile inflammatory responses are mediated by the inflammasome. (U. Ikeda et al. Circulation, 2011). Increased levels of interleukin (IL)-18 have been found during experimental alveolar hypoxia (K.O. Larsen et al. Cardiovasc Res, 2008), but it is not known whether hypoxia activates inflammasome leading to increased IL-18 levels. We wished to investigate if hypoxia activates the inflammasome, leading to activation of caspase-1, IL-18 and IL-1 β .

Objective: To study activation of caspase-1, IL-18 and IL-1 β during hypoxia exposure in mice.

Methods: Measuring active caspase-1, IL-18 and IL-1 β by Western blot analysis in the lungs of C57Bl/6j mice exposed to hypoxic conditions at 1, 3, 7 days and 4 weeks.

Results: Active caspase-1 and IL-18 were significantly increased at day 3, 7 and 4 weeks. IL-1 β showed upregulation, but it did not reach statistical significance.

Conclusions: Active Caspase-1 was induced during hypoxia indicating activation of the inflammasome. Both IL-18 and IL-1 β were upregulated, but IL-1 β did not reach significance. IL-18 is previously been implicated in lung inflammation and cell death (F.T.Cero et al. Exp.Lung.Res. 2012). Activation of the inflammasome may play a role in the cytokine mediated progression of lung disease under hypoxic condition.

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Resection rate and operability of elderly patients with non-small cell lung cancer in Iceland

Kristjan Baldvinsson, Andri Wilberg Orrason, Hunbogi Thorsteinsson, Martin Ingi Sigurdsson, Steinn Jonsson, Tomas Gudbjartsson

University of Iceland, REYKJAVIK, Iceland

Objective: An increasing number of elderly patients with non-small cell lung carcinoma (NSCLC) are evaluated for surgical resection. We compared resection rate (RR), operability and survival in this group (≥ 75 years) to younger patients using databases in Iceland.

Methods: Information on all patients diagnosed with NSCLC in Iceland from 1991 to 2010 was retrieved from medical records and the Icelandic Cancer Registry. Tumors were staged clinically (TNMc) and the reasons for exclusion from resection were registered for patients diagnosed with cTNM stages IA - IIIA.

Results: Of 2263 confirmed cases of NSCLC, 735 (32.5%) patients were classified as elderly. Surgical RR for the elderly group was 14.7% compared to 26.3% for younger patients ($p < 0.001$). The rate of major complications was 12% in the elderly group, not different than for younger patients (15%, $p = 0.45$). The same was true for 30 day mortality (0.9 vs 0.7%). Five year overall survival (39% vs 42%, $p = 0.28$), and cancer specific survival (55% vs. 47%, $p = 0.64$), were similar. Preliminary results showed that 56.7% of the elderly patients with localized/regional disease were excluded from surgery. The most common reasons were pulmonary function (37.4%), multiple co-morbidities (21.6%), central tumor location (16.5%), poor ECOG performance status (12.1%), heart disease and dementia. Elderly patients with incidentally detected tumors were more often operated on than those presenting with symptoms (38% vs. 22%, $p = 0.02$).

Conclusion: Elderly patients with potentially resectable NSCLC are frequently excluded from surgery due to co-morbid conditions. The favourable 30 day and long term survival for this age group compared to younger patients may reflect a selection bias.

Incidence of tuberculosis in children from the family contact

Anna Starshinova, Irina Dovgaliuk, Natalia Korneva, Viacheslav Zhuravlov

St. Petersburg Institute of Phthysiology, St. Petersburg, Russian Federation, ST.-PETERSBURG, Russian Federation

Children from the family contact of tuberculosis are the most threatened group to develop tuberculosis disease.

Objectives: detection of tuberculosis in the children with the family contact

Materials and Methods: at children department of phthysiology we examined 160 patients aged from 1 to 14 years old who have a family TB contact, in the years 2009-2011. Diagnostic complex included: QuantiFERON-TB Gold (QFT-

Gs), multislice computer tomography (MCT). Bronchoalveolar lavage was simultaneously examined by RT-PCR (IS6110 DNA fragment based) and culturing on Lowenstein-Jensen medium and BACTEC MGIT960. TB diagnosed basing on clinical, positive QFT-Gs and Rx symptoms.

Results: after examination only 40 children (25.0%) have not tuberculosis disease (I group), 120 patients (85.0%) - II group, have tuberculosis: in 76.7% (92) of intrathoracic lymphatic nodes and in 23.3% (28) generalized forms. Among them 10.8% cases (13) gave positive result in RT-PCR. In the second group children have significantly higher (64.3% av. 30.0%, $\chi^2 = 7.01$, $p < 0.01$) contact with a sick relative with tuberculosis disease with positive microbiological tests. 21 children out of the group had contact with intentioned father, 35 with mothers. The most hard forms of disease were noticed at the contact with intentioned mothers.

Conclusions: children from the family contact of tuberculosis form the high-risk group.

Immunological parameters in patterns with tuberculosis

Anna Starshinova, Irina Dovgaliuk, Olga Yakunova

St. Petersburg Institute of Phthysiology, St. Petersburg, Russian Federation, ST.-PETERSBURG, Russian Federation

Objectives: identify changes in immune parameters in patterns in children with tuberculosis disease.

Materials and Methods: we examined 135 patients aged from 3 to 14 years with suspicion of tuberculosis according to the X-ray results. They were examined during the years 2010-2012 in the children's department of the Saint-Petersburg Institute for Phthysiology. The phthysiology examination included: QuantiFERON-TB Gold (QFT-G), tuberculin skin test (TT) and computer tomography examination (CT). After phthysiology examination we divided patients in two groups. TB diagnosis was decided basing on clinical and Rx symptoms. The first group (I) ($n = 66$; 48.8%) had no tuberculosis disease (control group). II group ($n = 69$; 51.2%) - with intrathoracic lymph nodes TB. Examination included: assessment of leucocytes' subsets ($CD3^+$, $CD4^+$, $CD8^+$, $CD4^+/CD3^+$, $CD8^+$, $CD16^+$, $CD20^+$, $CD25^+$, $CD95^+$, HLAII), cytokines (TNF- α , IL-2, IL-4, INF- γ) by complex of immunological tests ELISA (IgA, IgG, IgM).

Results: levels of $CD3^+$ (1.74 ± 0.08 , $p = 0.03$), $CD25^+$ (0.57 ± 0.03 , $p = 0.04$), HLAII (0.82 ± 0.05 , $p = 0.04$) and the level of INF- γ (17421.22 ± 2202.06 (I) vs. 21035.44 ± 1432.53 (II) $p = 0.05$) were significantly higher in II group compared to the control group (I). Specific antibodies titer was significantly higher in group II by the levels of the IgG antibodies (7.7% (I) vs. 22.9% (II), ($p = 0.05$)), and IgM (25.6% (I) vs. 45.8 (II), $p = 0.05$).

Conclusions: Assays of the $CD3^+$, $CD25^+$, HLAII, the level of INF- γ and specific antibodies (IgG, IgM) are the most informative tests for TB disease diagnosis in children.

Palliative care for patients with COPD

Guðrún Jónsdóttir

Landspítali, REYKJAVÍK, Iceland

The aim of the study is to describe and explore how general clinical guidelines for palliative care recently introduced in Landspítali University Hospital can be utilized for the purpose of improving healthcare for patients with chronic obstructive pulmonary disease (COPD) in a pulmonary unit. The goal is that health care professionals taking care of people with COPD and their families apply the principles of palliative care to improve quality of life. Theoretical background of the implementation is the contingency model by Roland van Linge. In this model effective implementation consists of congruency between the intervention and the environment or existing practice. In this qualitative research two interviews were carried out with nurses (N=8) on a pulmonary unit at Landspítali University Hospital, as key informants, where barriers and successful solutions for the

implementation of palliative care were identified. The themes that were analyzed from the interviews were *confusion of concepts* as regards palliative care and terminal care, that nurses were in *disagreement* with other health care professionals, e.g. physicians, about how to apply principles of palliative care in the unit as well as *uncertainty of the course of the disease* as hindering decision making for palliative care. Successful implementation was considered likely when health care workers *work together as a team*.

It is concluded that there is still considerable work to be done for clinical guidelines for palliative care to be successfully implemented in health care at the pulmonary unit. There is need for specialized palliative care for patients with COPD due to the complexity of the disease and the characteristics of course of the disease. Implementation of clinical guidelines in palliative care for patients with COPD needs to be based on specialized knowledge of the lung disease; it needs time and budget as well as amendments to the special needs of this patient group.

Spiriva® (tiotropium). Forkortet produktresumé. **Indikationer:** Tiotropium er en symptomlindrende bronkodilator til vedligeholdelsesbehandling af kronisk obstruktiv lungesygdom (KOL). **Kontraindikationer:** Overfølsomhed overfor tiotropium, atropin eller dets derivater samt indholdsstoffet lactosemonohydrat (indeholder mælkeprotein). **Bivirkninger:** *Almindelige (1-10%):* Mundtørhed er set hos ca. 4% af patienterne. *Ikke almindelige (0,1-1%):* Svimmelhed, hovedpine, smagsforstyrrelser, sløret syn, atrieflimren, faryngitis, dysfoni, hoste, gastroesophageal reflux, constipation, oropharyngeal candidiasis, udslet, dysuri, urinretention. *Sjældne (mindre end 0,1%)* bivirkninger samt bivirkninger med ukendt hyppighed, herunder angioedem, takykardi og paralytisk ileus, er anført i det fulde produktresumé. **Særlige advarsler og forsigtighedsregler vedrørende brugen:** Bør ikke anvendes som initialbehandling ved akutte episoder af bronkospasmer, dvs. som akut behandling. I overensstemmelse med tiotropiums antikolinerge virkning skal tiotropium anvendes med forsigtighed til patienter med snærvinklet glaukom, prostatahyperplasi eller blærehalsobstruktion. Inhalerede lægemidler kan forårsage inhalationsinduceret bronkospasme. Hos patienter med moderat til svær nedsat nyrefunktion (kreatinin-clearance \leq 50 ml/min) bør tiotropium kun anvendes, hvis fordelene opvejer den potentielle risiko. Tiotropium må ikke anvendes oftere end én gang dagligt. **Interaktioner:** Der er ikke set bivirkninger ved anvendelse sammen med andre lægemidler inkl. sympatomimetiske bronkodilatorer, methylxantiner, orale og inhalerede steroider. Samtidig indgift af andre antikolinerge midler er ikke undersøgt og kan derfor ikke anbefales. **Graviditet og amning:** Bør ikke anvendes. **Dosering:** Inhalation af indholdet af 1 kapsel én gang dagligt med HandiHaler® på samme tidspunkt. **Farmakologiske egenskaber:** I et 4-årigt studie sås en forbedring af lungefunktionen (FEV₁). Forbedringen forblev konstant i alle 4 år. I behandlingsperioden sås en reduktion på 16% i risikoen for død. Behandling med tiotropium reducerede risikoen for respirationssvigt med 19%. **Lægemiddelformer:** Inhalationspulver i kapsler. **Pakninger og priser (uge 18-19/2013):** Spiriva®, 30 kapsler med HandiHaler®: kr. 432,00; Spiriva®, 30 kapsler: kr. 415,00; Spiriva®, 90 kapsler: kr. 1157,00 (Priserne er inkl. recepturgebyr). Dagsaktuel pris findes på www.medicinpriser.dk **Udlevering:** B. Tilskudsberettiget. **Registreringsindehaver:** Boehringer Ingelheim International GmbH. De med * markerede afsnit er omskrevet og/eller forkortet i forhold til det af Sundhedsstyrelsen godkendte produktresumé af 19.06.2012. Produktresuméet kan vederlagsfrit rekvireres fra den danske repræsentant Boehringer Ingelheim Danmark A/S, Strødamvej 52, 2100 København Ø, tlf.: 39 15 88 88, Medicinsk Information eller via info.cop@boehringer-ingelheim.com

Spiriva® RespiMat® (tiotropium) Forkortet produktresumé. **Indikationer:** Tiotropium er en symptomlindrende bronkodilator til vedligeholdelsesbehandling af kronisk obstruktiv lungesygdom (KOL). **Kontraindikationer:** Overfølsomhed over for tiotropium, atropin eller dets derivater eller over for et eller flere af hjælpestofferne. **Bivirkninger:** *Almindelige (1-10%):* Mundtørhed er set hos ca. 3,2% af patienterne - oftest mild og forbigående. *Ikke almindelige (0,1-1%):* Svimmelhed, hovedpine, atrieflimren, palpitationer, supraventrikulær takykardi, hoste, epistaxis, faryngitis, dysfoni, obstipation, oropharyngeal candidiasis, dysfagi, udslet, pruritus, urinretention, dysuri. *Sjældne (mindre end 0,1%)* bivirkninger samt bivirkninger med ukendt hyppighed (frekvens kendes ikke, men bivirkningen er ikke set hos 2.802 patienter), herunder glaukom, obstruktion af tarmene inkl. paralytisk ileus samt overfølsomhedsreaktioner (inkl. akutte reaktioner), er anført i det fulde produktresumé. **Særlige advarsler og forsigtighedsregler vedrørende brugen:** Bør ikke anvendes som initialbehandling ved akutte episoder af bronkospasmer, dvs. som akut behandling. I overensstemmelse med tiotropiums antikolinerge virkning skal tiotropium anvendes med forsigtighed til patienter med snærvinklet glaukom, prostatahyperplasi eller blærehalsobstruktion. Inhalerede lægemidler kan forårsage inhalationsinduceret bronkospasme. Hos patienter med moderat til svær nedsat nyrefunktion (kreatinin-clearance \leq 50 ml/min) bør tiotropium kun anvendes, hvis fordelene opvejer den potentielle risiko. Spiriva RespiMat skal benyttes med forsigtighed hos patienter med kendt hjertetytmeforstyrrelse. Tiotropium (to pust på én gang) må ikke anvendes hyppigere end én gang dagligt. **Interaktioner:** Der er ikke set bivirkninger ved anvendelse sammen med andre lægemidler inkl. sympatomimetiske bronkodilatorer, methylxantiner, orale og inhalerede steroider. Samtidig indgift af andre antikolinerge midler er ikke undersøgt og kan derfor ikke anbefales. **Graviditet og amning:** Bør ikke anvendes. **Dosering:** To pust inhaleres én gang om dagen på samme tidspunkt. **Farmakologiske egenskaber:** Behandling med Spiriva RespiMat resulterer i en signifikant forbedring af lungefunktion, dyspnoe, livskvalitet, nedsat forbrug af p.n. medicin samt reduktion af KOL-eksacerbationer og hospitalsindlæggelser i forhold til placebo, hvor anden specificeret lungemedicin var tilladt. **Lægemiddelformer:** Inhalationsvæske, opløsning i patron. **Pakninger og priser (uge 18-19/2013):** Spiriva RespiMat inhalationsvæske 2,5 mikrogram, 1 patron med 60 pust: kr. 469,00. (Priserne er inkl. recepturgebyr). Dagsaktuel pris findes på www.medicinpriser.dk **Udlevering:** B. Tilskudsberettiget. **Registreringsindehaver:** Boehringer Ingelheim International GmbH. De med * markerede afsnit er omskrevet og/eller forkortet i forhold til det af Sundhedsstyrelsen godkendte produktresumé af 21.09.2012. Produktresuméet kan vederlagsfrit rekvireres fra den danske repræsentant Boehringer Ingelheim Danmark A/S, Strødamvej 52, 2100 København Ø, tlf.: 39 15 88 88, Medicinsk Information eller via info.cop@boehringer-ingelheim.com

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prescribe in COPD?



Seretide Diskus innöndunarduft, afmældir skammtar. Hver skammtur af Seretide Diskus gefur: 50 mikróg af salmeteróli (sem salmeterólxínafóat) og 100, 250 eða 500 mikróg af flútikasónprópiónati. **Ábendingar:** *Asmi:* Seretide Diskus er ætlað til samfelldrar meðferðar gegn astma, þar sem samsett meðferð (langverkandi berkjuvikkandi lyfs og barkstera til innöndunar) á við þegar ekki næst nægileg stjórn á sjúkdóminum með notkun barkstera til innöndunar og stuttverkandi berkjuvikkandi (beta-2-örvandi) lyfja eða þegar viðunandi stjórn á sjúkdóminum næst með notkun barkstera til innöndunar og langverkandi berkjuvikkandi (beta-2-örvandi) lyfja. *Langvinn lungnateppa:* Seretide Diskus er ætlað til meðferðar á einkennum hjá sjúklingum með langvinna lungnateppu með FEV₁ < 60% af áætluðu eðlilegu gildi (fyrir gjöf berkjuvikkandi lyfs) sem hafa umtalsverð einkenni þrátt fyrir reglulega meðferð með berkjuvikkandi lyfjum og sögu um endurtekna versnun. **Skammtar og lyfjagjöf:** Seretide Diskus er eingöngu ætlað til innöndunar. Ráðlagðir skammtar: *Asmi:* Fullorðnir og unglingar 12 ára og eldri: Einn skammtur með 50 mikróg salmeteról og 100 mikróg flútikasónprópiónat, tvisvar sinnum á dag, eða einn skammtur með 50 mikróg salmeteról og 250 mikróg flútikasónprópiónat, tvisvar sinnum á dag, eða einn skammtur með 50 mikróg salmeteról og 500 mikróg flútikasónprópiónat, tvisvar sinnum á dag. *Börn 4 ára og eldri:* Einn skammtur með 50 mikróg salmeteról og 100 mikróg flútikasónprópiónat, tvisvar sinnum á dag. Hámarksskammtur af flútikasónprópiónati í Seretide Diskus, sem skráður er fyrir börn, er 100 mikróg tvisvar á dag. Upplýsingar varðandi notkun Seretide Diskus hjá börnum yngri en 4 ára, liggja ekki fyrir. *Langvinn lungnateppa:* Einn skammtur með 50 mikróg salmeteról og 500 mikróg flútikasónprópiónat, tvisvar sinnum á dag. **Frábendingar:** Seretide Diskus er ekki ætlað sjúklingum með ofnæmi fyrir virku efnum eða hjálparefnum. **Markaðsleyfishafi:** GlaxoSmithKline ehf., Þverholti 14, 105 Reykjavík, Ísland, Sími 530 3700, Dagsetning endurskoðunar textans: 1. febrúar 2012. **Upplýsingar um aukaverkanir, milliverkanir, varnaðarorð og önnur mikilvæg atriði má nálgast í sérlyfjaskrá – www.serlyfjaskra.is.**

Pakkningar og verð (maí 2013). Seretide Diskus 50/100 mikróg/skammt innöndunarduft, 60 afmældir skammtar. R,G 6.442 kr. Seretide Diskus 50/250 mikróg/skammt innöndunarduft, 60 afmældir skammtar. R,G 9.940 kr. Seretide Diskus 50/500 mikróg/skammt innöndunarduft, 60 afmældir skammtar. R,G 12.728 kr.

Aukaverkanir má tilkynna á vef Lyfjastofnunar: www.lyfjastofnun.is/Aukaverkanir/tilkynna eða til GlaxoSmithKline í síma 530 3700.